Wild Food

IN AUSTRALIA

A. B. & J. W. Cribb

Paintings by
CHARLES McCUBBIN

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PREFACE

Living off the land may be an attractive proposition for many with an interest in natural history, but it is probably more pleasant in theory than in practice. If plants were to form an appreciable part of the diet, gathering and preparing them would be almost a full-time occupation; lying on one's back and reaching for an overhanging banana is an over-idealized picture of living off the land. In Australia today it would also be impracticable for any but a very small proportion of the population to live on the product of the native bushland. It is probably not always realized what a lot of country is needed to support a food-gathering people. There were possibly 300,000 Aborigines in Australia when Captain Cook arrived, and this number was probably in a fairly satisfactory equilibrium with its environment. What proportion of the present population of modern Australians could hope to survive on the remnants of the bush which once supported this number? And what destruction would be caused!

Nevertheless, these considerations need not deter us from taking an interest in edible native plants or from sampling them when opportunity offers. However, we must emphasize that the various regulations designed for the protection of the flora should always be observed; these regulations differ in the different States. In New South Wales, for example, there is total protection of plants on Crown land; in Queensland, total protection applies in national parks, and there is also a list of protected plants, including all orchids and some ferns, which may not be gathered other than on private land with the permission of the owner. Even where no regulations are in force, there should be no unreasonable destruction of plants; take small amounts from several trees rather than stripping one, and always leave a considerable portion of the crop, remembering that future visitors may include yourself. A good general rule is to leave the area looking the same as it was found.

In this book, the preponderance of species from the northern part of the country is not a reflection of the writers' main area of interest but of the varying number of species available to the Aborigines in different parts of the country.

We have included most of the eastern Australian species known to us to have parts which are edible either raw or after some type of preparation; but some species will have been missed, and inevitably we shall have surprised and annoyed a few people by not having included their favourite native fruit. We have, over the years, eaten more than 200 of the native plants, but our total forms a disappointingly small proportion of the number reported as edible. It has therefore been necessary to rely heavily on records of previous authors. This is not a textbook, and, in most cases, the source of our evidence is not documented. However, a list of references is given at the end of the book and, although it is not exhaustive, this list includes the more important sources of information.

For most species we have tried to give some brief descriptive detail. To give a comprehensive description from which determinations could be made would be quite beyond the scope of this book; the descriptive notes supplied will, we hope, indicate whether or not one is on the right track. There are now several wildflower books which will be found useful, and, for some areas, there are modern handbooks or floras available to those who want to make serious attempts at identification. We recommend the following:

BEADLE, N. C. W. (1971, 1972). *Students' Flora of North-eastern New South Wales.* Parts 1–2. University of New England, Armidale.

BEADLE, N. C. W., EVANS, O. D. and CAROLYN, R. C. (1972). *Flora of the Sydney Region.* A. H. & A. W. Reed, Sydney.

BLACK, J. M. (1965). *Flora of South Australia.* Government Printer, Adelaide.

BURBIDGE, N. T. and GRAY, M. (1970). *Flora of the Australian Capital Territory.* Australian National University Press, Canberra.

CURTIS, W. M. (1956–1967). *The Student's Flora of Tasmania.* Vols. 1–3. Government Printer, Tasmania.

WILLIS, J. H. (1970, 1972). *A Handbook to Plants in Victoria.* Vols 1–2. Melbourne University Press, Melbourne.

Botanical synonyms have been listed only sparingly and have been limited to those cases where confusion seemed most likely to occur through their omission. When species have several common names we have tried to use those that seemed to be the most generally accepted but our choice, in some cases, has been arbitrary.

Distributions have been given by States and, for the purpose of the book, the Australian Capital Territory is regarded as part of New South Wales.

Species have been grouped into the chapters dealing with fruits and seeds mainly on the basis of whether the seed or the enclosing fruit wall is the more important edible part. Some species could have fitted in either chapter and here an arbitrary choice has been made. The disposition has not been on a strictly botanical basis; for example, in *Diploglottis australis* the edible, fleshy portion is, botanically, part of the seed, but since most people would assume it to be fruit we have included it under that heading; in the case of Nardoo which is included with the fruits, the edible structure is neither a fruit nor a seed in the botanical sense.

Within Chapters 1 to 7 species have been arranged alphabetically under the headings Trees and Shrubs, Climbers and Scramblers, Grasses and Sedges, Ferns, and Herbs. We hope that such an arrangement will make the book easier to use. However, inevitably there are borderline cases; the banana, for example, is botanically a herb, but being of tree size has for convenience been included with Trees and Shrubs in Chapter 2 (Fruits). An asterisk against the name of a species indicates that it is exotic and naturalized.

We are indebted to the Queensland Government Botanist for permission to use the collections and library of the Queensland Herbarium, and to the staff of the Herbarium, especially Mr L. Pedley, for advice on numerous questions referred to them.

A. B. CRIBB
J. W. CRIBB

1 The Food Plants

OVER A HUNDRED YEARS AGO the eminent English botanist, J. D. Hooker, writing of Australian edible plants, suggested that many of them were 'eatable but not worth eating'. To the modern Australian, there may seem to be considerable justice in such a view; for example, baked, pounded gum-tree root bark holds only meagre appeal for most people. Nevertheless, the Australian flora, together with the fauna, supported the Aboriginal people, and some items which, to Hooker, may have seemed poor fare indeed, may well have been delicacies to those accustomed to them.

In Europe, there is a long tradition, developed mainly as a matter of necessity, of eating wild products and modern man can draw on this information which has accumulated through the centuries when, for interest, he wants to sample the uncultivated foods about him. There was a similar tradition in Australia, even better developed because the Aborigine was not a farmer and was wholly dependent for life on the wild products around him. He learned to eat, often after treatment, a wide variety of plants. If we made a careful search today for edible plants in the Australian flora, many of the foods that were used by the Aborigines would probably be overlooked; who would persist with a tuber such as Ludwig Leichhardt found, whose 'sickening bitterness' was destroyed by neither roasting nor boiling? Yet this was one of the Aborigines' foods.

But the conquering white man displaced the Aborigines, killing many, driving others from their traditional tribal lands, and eventually settling many of the tribal remnants on government reserves where flour and beef replaced the nardoo and the wallaby. And so, gradually, the vast store of knowledge, accumulated over thousands of years, fell into disuse. Much was lost.

However, a few white men took an intelligent and even respectful interest in the race that was being displaced – explorers, missionaries, botanists, naturalists, government officials – they observed, they recorded, and fortunately in some cases they published. Today, we can draw on these publications to form the main basis of our knowledge of the edible, natural products of Australia. The picture is no doubt very incomplete. It is surprising to find how often all references to the edibility of a particular species are based on publication of a single, original observation, which is reiterated by subsequent authors, including ourselves. We can only speculate on the number of edible plants on which no observation has ever been recorded.

Not all our information on the subject comes from the Aborigines. Times were hard in the early days of white settlement, traditional foods were often in short supply or impossibly expensive for a pioneer trying to hack a farm out of the hostile bush. And so necessity led to experimentation, just as it must have done for the Aborigines, and experimentation led to a few lucky results. So far as is known, the Aborigines made no use of *Leptospermum* or *Dodonaea* as food plants, yet the early settlers found that one could be used as a substitute for tea and the other for hops. These plants are not closely related to the species that they replaced, so their use was not based on botanical observation. Probably some experiments had less happy endings; L. J. Webb has used the expression 'eat, die and learn' in connection with the Aboriginal experimentation, but it was the successful attempts that became widely known. Possibly the edibility of some native plants used by the Aborigines was discovered independently by the white man or his children. A number of reports in the literature such as 'suspected of poisoning children', indicate what useful experimenters children are.

Explorers making long expeditions found it impossible to carry sufficient food for the whole journey and were forced to rely, in part, on food that they could find on the way. Perhaps the greatest exponent of 'living off the land' was Ludwig Leichhardt, a man almost without consideration for his personal comfort. On one occasion, from the crop of cockatoos shot for food, he recovered and ate fruits resembling grains of rice. What an inspiration for a sampler of native foods!

Still another source of information comes from the practice in other countries. There are many species from northern Australia which occur also in southeast Asia and, in some cases, we know from experience there that some of our plants are edible even though no record of Aboriginal use has persisted. Some of our weeds are well known as sources of emergency food in Europe.

So the record, incomplete as it is, can gradually be built up. In this book we make no claim to have included all the edible plants of eastern Australia; we are sure that there must be many of which we have no knowledge. Nor do we claim that all the plants we have included will give pleasure to those eating them. From our own experience we know some will not. A well-fed man is not likely to take much pleasure in chewing a fibrous root some time between lunch and dinner. But several days without food could bring about a remarkable change in attitude. Hunger is said to be the best sauce. Few of us find ourselves in the position of really being able to test this statement, but one has only to read the journals of early Australian explorers to find its truth revealed. One sees how they became less fussy about their food as time went on and conventional supplies ran low. Joseph Banks, writing while the *Endeavour* was being repaired after running aground on the Great Barrier Reef, put it admirably: 'We had been so long at sea with but a scanty supply of fresh provisions that we had long used to eat every thing we could lay our hands upon, fish, flesh or vegetable which only was not poisonous;'.

Ludwig Leichhardt, likewise, came to appreciate fairly rough fare: 'Oppressed by hunger, I swallowed the bones and the feet of the pigeon, to allay the cravings of my stomach. A sleeping lizard with a blunt tail and knobby scales, fell into our hands, and was of course roasted and greedily eaten.' Later, on the same journey, he enjoyed another unconventional meal: 'We enjoyed most gratefully our two wallabies, which were stewed, and to which I had added some green hide to render the broth more substantial. This hide was almost five months old, and had served as a case to my botanical collection, which, unfortunately, I had been compelled to leave behind. It required, however, a little longer stewing than a fresh hide, and was rather tasteless'.

Of course, not all the plants noted in this book were used by all the Aborigines of eastern Australia. Some of the species have a wide distribution but others are limited to relatively small areas. In general, those Aborigines living in the dry inland areas were largely dependent for their vegetable foods on seeds such as those of grasses, acacias and eucalypts. They ground these seeds between mainly flat stones to make a coarse flour. Tribes on the coast, and particularly those in the vicinity of rainforests, had a more varied vegetable diet with a higher proportion of fruits and tubers. Some of the coastal plants, even if they had grown inland, probably would have been unavailable as food since they required prolonged washing or soaking to render them non-poisonous; many of the inland tribes could not obtain water in the quantities necessary for such treatment. There was also considerable variation in the edible plants available to Aborigines in different latitudes. In general, the people who lived in the moist tropical areas enjoyed a much greater variety than those in the southern part of Australia.

With all the hundreds of plant species used for food by the Australian Aborigines it is perhaps surprising that only one, the Queensland nut, has entered into commercial cultivation as a food plant. The reason for this probably does not lie with an intrinsic poverty of potential in the Australian flora but rather with the lack of exploitation of this potential. In Europe and Asia, for example, the main food plants have had the benefit of many centuries of cultivation which in many cases has led, through selection and hybridization, to the production of forms vastly superior to those in the wild. In some, the cultivated form has been improved to such an extent that its ancestors are now a matter of conjecture.

At the time of the coming of the white man, Australia was inhabited by men whose culture was of the Stone Age and who were food gatherers and hunters. The Aborigines practised no agriculture and so there was no opportunity for improvement, either deliberate or unconscious, in the quality of the edible plants. Perhaps the occasional specimen of superior quality may even have been at a disadvantage if its fruits or seeds were so assiduously gathered that it was given little chance to propagate itself.

Since 1788 there has, of course, been opportunity for selection and breeding of Australian food plants which might have led to the production of varieties that were worth cultivating. But Australian plants have probably 'missed the bus'. Food plants from other regions were already so far in advance after a long tradition of cultivation that it seemed hardly worth starting work on Australian species. Undoubtedly native raspberries, for example, could with suitable selection and breeding programmes, be made to yield a high-class fruit; but we already have good raspberries from other areas and unless some dedicated amateur plant breeder takes up the task, the Australian raspberries are likely to remain unimproved.

And so, today, with the pattern of our food plants well established and ourselves with no immediate prospects of starvation or of being lost for long periods in the bush, our interest in the subject of Australian food plants tends to relate to natural history rather than to practical necessity.

Anyone who embarks on a hobby of eating native plants has a fascinating field of study, which may be marked by a few surprises. However, with good sense and care, little harm is likely to befall him. Unfortunately there are few general guides to edibility which can be given. Taste is one of the best indicators – an unpleasant taste will protect most people from many poisonous plants but there are, as well, some dangerous species which have no unpleasant taste. Colour provides no general guide except to the extent that some fruits are poisonous when green and unripe but harmless when fully ripe and coloured. Plants with a milky latex should be regarded with some suspicion since some families of plants with latex contain a high proportion of poisonous species; however, by no means are all these latex-bearing plants poisonous.

Animals do not always provide a reliable indication of a plant's suitability for human consumption, although the more closely related the animal is to man the better the guide it gives. Insects are no use at all; the larva of the common crow butterfly spends its life munching steadily through oleander leaves, one of which could kill a man. Birds provide a better lead but are by no means infallible: in some cases a poisonous part may be voided without absorption; for example, the large blue fruits of *Cerbera floribunda* are eaten by the cassowary but the poisonous seed passes through it, causing no harm. Even though a bird may eat a fruit that is non-poisonous the flavour may be so unpleasant to human taste as to make it quite inedible. Marsupials, being closer to humans, probably provide a better guide, but even here the example cannot be followed too closely; the koala's diet of gum-leaves is not to everyone's liking. Monkeys are usually regarded as reliable indicators but they are absent from the Australian bush.

There are tests for some of the main groups of substances which are likely to be poisonous, and some of the simplest of these are given below. A positive reaction to a test does not necessarily prove that the plant will be poisonous but it does indicate that special caution should be exercised in experimenting with its edible qualities. Tea leaves, for example, will give a positive reaction to tests for alkaloids but are not poisonous in the quantities normally used. Conversely, lack of a positive reaction to the tests given below does not prove conclusively that the plant is harmless; there are some plant poisons for which no satisfactory chemical test has been devised. It is, of course, quite common for a plant to contain toxic principles of more than one chemical class.

Heating destroys *some* poisons, so boiling or baking is a wise precaution for a doubtful plant. In cases where the Aborigines are known to have given the plant elaborate treatment we strongly recommend that similar methods be used by anyone eating the plant; some species might be dangerous without it.

If experimenting with something quite unknown, it is only commonsense to try a small amount first and to allow a reasonable time to elapse for symptoms to develop before taking it in quantity. There is little doubt that anyone willing so to experiment will be able to add to knowledge of Australian food plants.

SOME CHEMICAL TESTS FOR SUBSTANCES WHICH MAY BE TOXIC

Saponins: Thoroughly grind or pound a sample of the plant and shake vigorously with water, preferably after brief boiling and cooling. The appearance of a froth, stable for half an hour, indicates the presence of a saponin. Some plants such as Red Ash (*Alphitonia excelsa*) have such a high saponin content that their leaves may be used for washing the hands. Aborigines threw crushed material of saponaceous plants into pools to stupefy fish.

Cyanogenetic glucosides: To test for these substances which release prussic acid when the tissues containing them are crushed, first prepare sodium picrate testing paper. Dip absorbent paper such as blotting paper or filter paper in a 1 % solution of picric acid and allow it to dry. Then dip briefly in 10% sodium carbonate (washing soda) solution and again dry. A store of this test paper may be kept for use when required.

Pound or thoroughly crush the plant material, e.g. a few small leaves or part of a large leaf. Place the material in a small container such as a test tube or pill bottle. Moisten a strip of test paper and insert it into the container, holding it in place with the cork or lid. In the presence of prussic acid, the yellow paper will gradually turn orange-yellow or brick red, the change occurring within a few minutes to several hours. Peach leaves are good material to use to demonstrate a positive reaction.

Many but not all cyanogenetic glucosides release benzaldehyde, the odour of bitter almonds. These can be tested for very simply by crushing the material thoroughly, holding tightly between the palms of the hands for at least thirty seconds, then sniffing. The odour of bitter almonds indicates the presence of one of these glucosides.

Alkaloids: Some alkaloids have a bitter taste. The chemical tests for these substances are more complex than those noted above. Details of a method of testing used widely in Australia will be found in the *Journal of Pharmaceutical Sciences* Vol 52, No. 3, pp. 303–304.

Efficient dispersal of seeds is essential for the survival of a plant species. Among dispersal mechanisms are adaptations that exploit animals. One such adaptation is the development of fleshy fruits that are attractive to animals which may carry the fruit some distance before eating the succulent part and rejecting the hard-coated seeds, or else eat the whole fruit and void the seeds which pass through the body protected by their seed coat.

Man as much as other mammals and birds is attracted to fleshy fruits and has used a wide variety of them in his diet. Our cultivated fruits, for the most part, show distinct superiority over their wild ancestors because they have been much developed by selection and breeding. The sour crab-apple with which perhaps Eve tempted Adam would not be recognized in the Jonathan or Granny Smith we enjoy today, but was no doubt appreciated by primitive man.

The Australian native fruits are still at the 'crab-apple' stage of development so, on the whole, compare unfavourably with cultivated fruits. There are, nonetheless, a considerable number of them worth eating raw, and a larger number that respond to stewing or making into jams and jellies.

Any standard jam recipe may be used for native fruits. The rule of weight-for-weight of sugar to fruit applies if the fruits are sour, otherwise three-quarters the weight of sugar is enough. Where the seeds are numerous and embedded in the pulp it is preferable to make jelly; in this case *barely* cover the fruit with water and boil for 30 minutes to 1 hour depending on the hardness of the fruit; strain, add cup for cup of sugar and boil until it jells. As with the more familiar jam fruits, it is advisable to use the crop while it is a little under- rather than over-ripe, otherwise the jam or jelly may not set.

TREES AND SHRUBS

Acronychia

Rainforest trees are notoriously difficult to identify, but in some cases there are useful characters which give an easy clue. In *Acronychia* look for translucent oil dots by holding the leaves up against the light; the leaves are opposite, simple or trifoliate. The fleshy fruits are four-celled, cream, yellow, purple or red, and either rounded or clearly four-angled. A few seem to have been eaten but little is known of their edible qualities. The species we have tried have been acid and rather too aromatic to be really enjoyable. They might be better used to make jam. *A. acidula*, *A. laevis* and *A. scortechinii* (Logan apple, Scortechini's crab) are all reported edible. Distribution: Qld, N.S.W.

Alectryon tomentosus RED-JACKET

The pinnate leaves of this species have two, three or four pairs of toothed leaflets. A character which helps to distinguish it from numerous other pinnate-leaved species of rainforests is the fact that the terminal pair of leaflets is usually distinctly larger than those below. The fruit has one, two or three lobes, each about 7 mm broad. At maturity the upper part of the wall falls off, exposing each lobe's jet-black seed partly enveloped in a scarlet, fleshy jacket which is crisp and pleasant to eat. Other species of *Alectryon* would be worth trying as well.
Distribution: Qld, N.S.W.

*Annona glabra** ALLIGATOR APPLE, POND APPLE

This immigrant tree from Florida is well established in swampy areas at the margins of mangroves in several places in north Queensland. The heart-shaped fruit is like a smooth-skinned custard apple, to which it is closely related, but the individual segments, obvious on the custard apple, are marked only by a faint reticulation. Internally, the flesh also resembles that of the custard apple but is drier and pale salmon in colour. Although edible, it is a very poor substitute for its cultivated relative.
Distribution: Qld

Antidesma CURRANT TREE

Antidesma is a genus of shrubs and small trees with simple, alternate leaves, bearing inconspicuous male and female flowers on different plants. The rounded fruits, mostly 6–12 mm across, vary in colour from cream to red and purple-black, and have an acid pulp surrounding the central stone. They are borne densely along the flowering stalk of the female tree, and this crowding of the fruit is probably the most distinctive, obvious feature of the plants.

At least six of the seven Australian species have edible fruits which, in earlier days, were popular for making jams and jellies. Jelly made from the fruits of *A. dallachyana*, which may reach 2 cm in diameter, was said to be as good as that from the red currant of Europe. *A. bunius* is a common tree also in parts of southeast Asia, and its stalks of closely clustered fruits are sometimes seen on small stalls in fruit markets.

Distribution: *A. bunius* – Qld
A. dallachyana – Qld, N.T.

Arytera lautereriana CORDUROY TAMARIND

The corduroy tamarind takes its name from the wrinkled surface of the sapwood and the tamarind-like pulp of the fruit. It is a rainforest tree, its pinnate leaves with 8–16 pairs of leaflets with undulate margins. Like many other members of the family Sapindaceae, it has prominent swellings (pulvini) at the base of leaflets and leaf stalk. The fruit, about 2·5 cm broad, is usually a three-lobed structure, although specimens with two lobes or one can be found. Each lobe contains a single seed surrounded by an edible, acid pulp similar in flavour to that of *Diploglottis australis*.
Distribution: Qld, N.S.W.

Astroloma humifusum (*Styphelia humifusa*) NATIVE CRANBERRY, CRANBERRY HEATH, TASMANIAN CRANBERRY

This is a small, densely branched, more or less prostrate shrub usually less than 30 cm high. The rigid leaves about 1 cm long end in a needle-like point. Bright red, tubular flowers are followed by greenish fruits with a sweet viscid pulp surrounding the stone.
Distribution: N.S.W., Vic., S.A., Tas.

Austromyrtus dulcis

Along much of the sandy coastal country of southern Queensland and northern New South Wales this small, spreading shrub produces one of the best of the edible native fruits. The dagger-shaped leaves, about 2 cm long, are pink and silky when young and help to justify a place in the garden. Its white flowers are borne singly in the leaf axils and are followed by rounded fruits that are pale lilac or almost white with darker purple flecks, and about 1 cm across. Their soft pulp has a sweet, mildly aromatic flavour. The skin is very soft and the seeds small so the whole fruit can be eaten with pleasure.

James Backhouse, a Quaker who travelled extensively in Australia on a religious mission in 1831–1838, came across this plant on the sandhills of Moreton Island near Brisbane and was impressed by the quality of its fruit. He wrote in his journal: 'These are the most agreeable, native fruit, I have tasted in Australia; they are produced so abundantly, as to afford an important article of food, to the Aborigines.'

Distribution: Qld, N.S.W.

Brachyloma depressum SPREADING BRACHYLOMA

B. depressum is another of the heaths. The flowers are white; the fruits which are about pea-size are borne in considerable quantities. The ripe fruits are described as having a heavy, rather musky odour, but can be used for making a good quality jam or jelly of a rich claret colour 'and were eagerly sought for by the settlers of northwestern Victoria . . . '

Distribution: Vic., Tas.

Buchanania arborescens LITTLE GOOSEBERRY TREE

In 1845, Leichhardt wrote in his journal of a new fruit; 'My companions had, for several days past, gathered the unripe fruits of Coniogeton arborescens, *Br.*; which when boiled, imparted an agreeable acidity to the water, and when thus prepared tasted tolerably well. When ripe, they became sweet and pulpy, like gooseberries, although their rind was not very thick. This resemblance induced us to call the tree "the little Gooseberry tree". . . . The fruit was much esteemed there by the natives.'

This tree, now known as *Buchanania arborescens*, is a member of the mango family. It has alternate leathery leaves, sprays of white flowers, and purple fruits usually about 1 cm broad which, as described by Leichhardt, may be eaten or used to prepare a beverage.

A second tropical species, *B. obovata*, the green plum, also has an edible fruit.
Distribution: Qld, N.T.

Capparis NATIVE CAPER, CAPER BUSH, NATIVE POMEGRANATE

Capers are known to most people in the pickled form. The small, soft, rounded pickles are actually the flower-buds of *Capparis spinosa*, a spiny, sprawling shrub originally from the Mediterranean region. It is now grown widely in warm regions, a spineless form being used in some areas.

With about twenty species, Australia is well endowed with the genus, which ranges from coastal rainforests to the dry interior. Some are small trees but most are shrubs or scrambling climbers. The majority are spiny, with the spines in pairs at the base of each leaf-stalk. However, in some species there is a great deal of difference in spininess and leaf form between juvenile and adult parts: for example, in *C. arborea* of coastal rainforests, young plants are extremely spiny, while flowering branches are almost unarmed.

Capparis flowers are very distinctive with white petals, numerous long stamens and a green elliptical ovary seated at the top of a long stalk. Petals and stamens do not persist long, and sometimes all will fall off at a touch.

No use seems to have been made of the buds of Australian capers but the fruits of most, probably all, were eaten by the Aborigines. Some species have fruits up to 7 cm across, but most are smaller. At maturity they are generally orange-yellow and contain numerous black seeds embedded in a sweet, palatable pulp. As a child, one of us competed with ants for the ripe fruits of one species, but usually lost to the ants who cleared out the last trace of pulp, leaving only the tough orange skin.
Distribution: Qld, N.S.W., S.A., W.A., N.T.

Carissa ovata

A very easily recognized shrub is *Carissa ovata*, a species with a wide-ranging habitat from shady coastal creek banks to the dry inland. Its shiny opposite leaves have robust, simple or forked spines in their axils, and a milky latex flows from injuries. The white, fragrant flowers are followed by ellipsoid or egg-shaped fruits up to 1·5 cm long. When black and quite ripe the flesh is pleasant and sweet and contains only one or a few seeds.
Distribution: Qld, N.S.W., N.T.

Citriobatus spinescens ORANGE-THORN,
(*C. multiflorus, C. pauciflorus*) NATIVE ORANGE

Not many shrubs are found within rainforests, but one that is quite common and easily recognized is *Citriobatus*. It is a twiggy, thorny shrub with small leaves about one cm long and not much longer than wide. The hard, yellow, round fruits 1–3 cm across were eaten by the Aborigines. Although the name and superficial appearance suggest that *Citriobatus* is a citrus, it is in fact not closely related at all.
Distribution: Qld, N.S.W., N.T.

*Citrus limon** BUSH LEMON

Domestic lemons have become naturalized along some creek banks. Being derived from seed rather than being grafted plants, as are most cultivated lemons, their fruits lack some of the refinements of marketed specimens and are referred to as bush lemons. Their skin is often thick and knobbly but the juice is of good quality.
Distribution: Qld, N.S.W.

Clerodendrum inerme

C. inerme is a broad-leaved shrub of coastal areas from Rockhampton northwards. It bears tubular, white flowers with petals 2–3 cm long and stamens protruding as far again. The rounded fruit, 1–2 cm broad, is rather spongy and not very succulent, but was eaten by the Aborigines.
Distribution: Qld, N.T.

*Cocos nucifera** COCONUT

Although not a native of Australia, the coconut is so well established along many shores in northern Queensland that it appears to be part of the natural vegetation.

Economically the coconut is the most important palm in the world, and in some tropical countries has been for centuries the staff of life, providing food, drink, clothing, fuel and shelter. The oily flesh lining the shell is its most valuable part and is familiar to most people in the form of shredded, desiccated coconut. However, the flesh from a freshly opened coconut is a much more delicious food, and tastes even better if one is fortunate enough to eat it under a swaying palm tree, beside a white beach of coral sand lapped by the blue ocean. (See also p. 179.)
Distribution: Qld, N.T.

COPROSMA

Botanical names are frequently accurate rather than flattering. *Coprosma* means dung-odour, and refers to the unpleasant smell of the crushed leaves of some members of this genus. Fortunately the fruits do not share this characteristic, and those of some species are edible though not spoken of highly.

The species of *Coprosma* have simple, opposite leaves and, like many other members of the family Rubiaceae, bear stipules (small leafy or scaly outgrowths) on each side of the stem between the leaves of a pair. In most species of this genus, male and female flowers are borne on different plants, the most conspicuous part of the female flower being the two long, hairy styles.

Coprosma quadrifida PRICKLY CURRANT-BUSH

This shrub of the moister forests has some of its lateral branches ending in fine spines. Venation shows prominently on the undersurface of the leaf. The red fruits 5–8 mm long are edible though said to be unpalatable. In the early days of settlement in Tasmania they were used to make puddings, although the relatively large stones were a drawback.
Distribution: N.S.W., Vic., Tas.

Coprosma nitida NATIVE CURRANT, SHINING COPROSMA

Like *C. quadrifida*, this is a shrub with some branches spiny but is distinguishable by its thicker, shiny leaves with the veins not showing clearly on the undersurface. It is a plant mainly of mountains over 800 m. The orange-red fruits resemble those of *C. quadrifida.*
Distribution: Vic., Tas.

Coprosma hirtella COFFEE-BERRY, ROUGH COPROSMA

The shiny leaves of the rough coprosma are easily distinguishable from those of *C. nitida* by being more than a centimetre wide, roughly reverse egg-shaped, and tapering suddenly into a sharp point. The clustered, red or black fruit are sweetish but not pleasant.
Distribution: N.S.W., Vic., Tas.

Cordia myxa SEBESTAN TREE

This widespread coastal tree of tropical Asia is found in Australia from approximately Rockhampton northwards. Its leaves, 5–8 cm long, have 3–5 prominent nerves radiating from the base. We have found no record of its use in Australia, but, in India, the sticky pulp of the ripe, yellowish fruits is eaten, and the young, green fruits used as a vegetable or pickle. The seed also can be eaten.
Distribution: Qld

Davidsonia pruriens OORAY, DAVIDSON'S PLUM

We regard the ooray as one of the best native fruits we know. Its blue-black, plum-like fruits with a few loose hairs on the surface have a soft, juicy purple flesh with relatively small flattened seeds with fibrous coats. The fruit is very acid but, stewed with sugar or made into jam or jelly, it provides a distinctive and most enjoyable food for anyone who likes a sharp taste in preserves.

Davidsonia is a small tree which occurs naturally in tropical rainforests, but is becoming more popular as a garden subject. The pinnate leaf has a toothed and often interrupted wing along each side of the axis, which provides a distinctive feature for recognition of the species.
Distribution: Qld

Dendrocnide photiniphylla **MULBERRY-LEAVED STINGING TREE**
(*Laportea photiniphylla*)

Nettles can be painful enough but their sting is not to be compared with the intense pain which can be inflicted by the stinging hairs of the related stinging trees of coastal rainforests. In some cases the pain recurs, with reduced intensity, for several weeks each time the affected part is subjected to a sudden change in temperature, as it is during washing. However, just as the unpromising looking nettles can be used for food, so also, with certain precautions, can fruit clusters of the mulberry-leaved stinging tree.

Flowers of the species of stinging trees are insignificant, but as the fruit matures its stalk and the persistent calyx become fleshy, producing a peculiar-looking fruit cluster, several centimetres long, which sometimes causes puzzlement when found on the rainforest floor. Perhaps they could be likened to clusters of small green or cream grubs.

D. photiniphylla has shiny leaves, in some cases with only a few stinging hairs, and its fruits are often almost devoid of hairs. We have tossed clusters in a bag and even in the hands to break the few hairs present and have then eaten the crisp, acid fruit with enjoyment.

It should be emphasized that stinging tree fruits should never be placed in the mouth until they have been carefully examined for stinging hairs, and until they have been given an opportunity of demonstrating any unfriendliness on some other part of the body. Distribution: Qld, N.S.W.

Dendrocnide excelsa **GIANT STINGING TREE**
(*Laportea gigas*)

The giant stinging tree is one of the large trees in Australian rainforests, being up to 40 m tall. Its leaves are always dull in appearance because of the presence of numerous, fine, harmless hairs among the larger stinging hairs. Leaves on young specimens are often particularly large, sometimes up to 25 cm in breadth. The plant is a worse stinger than *D. photiniphylla*, and its cream or mauve fruit clusters should be treated with corresponding respect.

Although the species is sometimes known as gympie gympie or

the Gympie nettle, that name should be reserved for *D. moroides* which is a shrub whose leaves have the stalk inserted on the blade within the margin. Its fruit clusters are similar to those of *D. excelsa* but the plant's reputation as a stinger is so bad that one should avoid unnecessary contact with any part of it.
Distribution: Qld, N.S.W.

Diospyros ferrea SEA EBONY

This species, found mainly in the tropics, exists in several varieties whose habitats range from dry inland areas to the shores of coral islands. The coastal variety is a small tree with rigid, blunt leaves often slightly notched at the apex. During summer it produces heavy crops of elliptical fruits, about 1·5 cm broad, which change from green to yellow to deep red. A small apical point marks the remains of the style, and the persistent calyx forms a saucer-like structure at its base. The fruit might be likened to a very small specimen of the persimmon, to which it is closely related. Like the persimmon the fruit is very astringent if unripe, but when deep red and soft its pulp is sweet and pleasant to eat. The fruits are one of the favourite foods of the Torres Strait pigeon which nests in its thousands on some islands off the north Queensland coast.

Ebony wood has been obtained from *D. ferrea* but the trees are mostly too small and irregular to be an important source of this timber.

There are several other species of *Diospyros*, some of them in coastal rainforests of Queensland and New South Wales. What little information there is suggests that the fruits of most of them were eaten by the Aborigines.
Distribution: Qld, N.T.

Diploglottis australis NATIVE TAMARIND

Commercial fruits from members of the family Sapindaceae are little known in Australia but, in southeast Asia, the rambutan, litchi and longan are all highly regarded fruits from the family. The group is well represented in Australian rainforests and some members produce fruit which, although not in the same class as the litchi, are certainly worth trying.

Native tamarind is one of the most easily recognized of rainforest trees. Young specimens still pushing their way up to the canopy above have a terminal crown of very large, coarse-looking pinnate leaves sometimes 60 cm long, with broad leathery leaflets, hairy on the underside. Adult leaves are usually much smaller but are mainly out of sight in the canopy. The yellow fruits have three, sometimes two or one, rounded lobes each about 1·2 cm broad and containing a single seed enclosed in an orange, juicy, jelly-like pulp. This is very acid but pleasant and refreshing. For those who find the taste too sour, a good drink can be made by boiling the fruits with sugar and water. They can also be made into jam. Distribution: Qld, N.S.W.

Elaeocarpus grandis BLUE QUANDONG

One of the tallest trees of the rainforest, the blue quandong can often be picked out from a distance projecting slightly from the canopy. Old leaves usually turn a brilliant red some time before they are shed, and so they stand out from the general green of the surroundings; the leaves are rather narrow, elliptical, finely toothed and tapering at both ends. Like most other species of *Elaeocarpus* this one has whitish bell-shaped flowers with the petals cut into a fringe, giving a very attractive appearance.

The flowers are followed by blue fruits about 3 cm in diameter, which are fleshy, but the very hard large pitted stone nearly fills the fruit; it is rather similar in appearance to the stone of *Santalum acuminatum*, the sweet quandong, to which however *Elaeocarpus* is not related. Although the fleshy layer is not thick, it was used by the Aborigines of the north as food, either as a fresh fruit or by squashing the flesh and mixing it with water in a bark trough to make a paste which was then eaten raw.

It is well worth saving the fruit stones as they can be used to make a very handsome necklace. Distribution: Qld, N.S.W.

Enchylaena tomentosa BARRIER SALTBUSH, RUBY SALTBUSH

One of the saltbushes, this is a small shrub, sometimes 50–60 cm tall, very common on the plains of the inland, often growing partially shaded by trees. The stems are silvery with a close woolly covering of hairs, and have narrow pale green leaves. Plants bear flattish, red, berry-like fruits which are sweet and succulent; they were eaten by the Aborigines. (See also p. 106)
Distribution: All mainland States.

Eremocitrus glauca NATIVE CUMQUAT, DESERT LEMON

A spiny shrub of the citrus group, *Eremocitrus glauca* grows in relatively dry forest country, and bears heavy crops of rounded yellow fruits 1–2 cm broad over a short period in summer. Useful for marmalade making, it can also be used to prepare an excellent drink; the rind is soft and less bitter than in most members of the citrus group, and the whole fruit can be put through a blender with sugar to form the base for a very refreshing drink.

Leichhardt came across quantities of this fruit on his overland journey to Port Essington and 'made them into a dish very like gooseberry-fool'.

Distribution: Qld

EUGENIA Lillypilly

Eugenia is a large genus of trees and shrubs well represented in eastern Australia, particularly in rainforests. Taxonomists have split this large genus and distributed its species among smaller ones so the species formerly found under *Eugenia* may now be found under *Acmena* or *Syzygium*. However, not all the Australian species have been reassigned so all are treated here under *Eugenia*.

The leaves are opposite, with oil glands visible as translucent dots when held against the light. Stamens are numerous and form the showy part of the flower. Fruits vary from 1 to 6 cm in diameter and are usually round to pear-shaped; at the upper end, the remains of the calyx form a ring around a central depression; the smooth skin is cream, purple, pink or red. In some species the fleshy layer is so thin that it is not worth bothering about, but in the majority it forms a reasonably thick, crisp to pithy layer which in all cases is sour and aromatic but in several species can be eaten with enjoyment. Even some species which, raw, provide interest rather than pleasure can be used to make an excellent jelly. Although eugenias have not been commercially exploited in Australia some are common and colourful items in fruit and vegetable markets in southeast Asia.

A species of *Eugenia* was possibly the first fruit sampled by Captain Cook's party in Australia. At Botany Bay, Banks wrote in his journal: 'They [Cook and Solander] found also several trees of the

Jambosa kind, much in colour and shape resembling cherries; of these they eat plentifully and brought home also abundance, which we eat with much pleasure tho they had little to recommend them but a light acid.'

Leichhardt was pleased to find various species of *Eugenia* on his overland journey in 1844–45, and there are some enthusiastic references to them in his journal. However, his assessment of their quality should be considered in relation to the quality of his main courses: 'I appeased my craving hunger, which had been well tried for twenty-four hours, on the small fruit of a species of Acmena which grew near the rocks that bounded the sandy flats, until my companions brought my share of stewed green hide.'

Although the common name lillypilly is applied in a restricted sense to *E. smithii*, it is sometimes used also for other members of the genus. The following are a few of the numerous species found in Australia:

Eugenia smithii LILLYPILLY
(*Acmena smithii*)

This is the most widely distributed of the Australian species, being found in coastal districts from Victoria to northern Queensland. Its rounded, purplish fruits are of poorer quality than some others. One author writes of their being 'eaten by Aborigines, small boys, and birds' which seems to be damning them with faint praise.
Distribution: Qld, N.S.W., Vic., N.T.

Eugenia coolminiana
(*Syzygium coolminianum*)

The rounded, purple-blue fruits up to 2·5 cm across contain a single, small seed which often rattles in the central cavity when the fruit is ripe. It is among the best of the *Eugenia* fruits.
Distribution: Qld, N.S.W.

Eugenia luehmannii CHERRY ALDER
(*Syzygium luehmannii*)

This species is particularly common in rainforests on sandy soil near the beach. It is readily distinguishable from most others of the group by its leaves which are drawn out into a long tapering point. Bright pink tints in young foliage make the trees worth

growing in the garden. The red fruits are pear-shaped and, although small, are often borne in great quantities.
Distribution: Qld, N.S.W.

Eugenia moorei ROBBY, DUROBBY
(*Syzygium moorei*)

The usual arrangement of red fruit following white flowers is reversed in this handsome tree of the Tweed and Richmond Rivers area. Showy red flowers are borne on short stalks from the old branches rather than the young growth as in most other species, and the large, rounded fruits, about 5 cm across, are cream coloured.
Distribution: N.S.W.

Eupomatia laurina NATIVE GUAVA

Eupomatia is of special interest to botanists because it is among the most primitive of the living flowering plants. A common shrub or small tree in coastal rainforests, it is a handsome plant with glossy, dark green leaves and cream flowers of peculiar structure. Its fruits, 2–3 cm broad, have roughly the form of a domestic fig, but there is a broad, round depressed area at the apex. Fruits ripen during winter, and when the fruit is soft and yellow-green the numerous seeds are surrounded by a clear, soft pulp which is sweet and aromatic and pleasant to eat, being slightly reminiscent of a guava.
Distribution: Qld, N.S.W., Vic.

Exocarpos cupressiformis NATIVE CHERRY, CHERRY BALLART

This small tree of eucalypt forests has slender branchlets devoid of leaves other than minute scale leaves. Young specimens are erect and somewhat cypress-like but old plants often assume a drooping habit. Like the mistletoe, *Exocarpos* is a parasite, but in this case on the roots rather than on the branches of other trees.

As the fruit matures its stalk increases too, eventually becoming larger than the true fruit and forming a fleshy, red, pear-shaped structure with the dull green true fruit seated on its apex. In the early days of Australian settlement this 'cherry with the stone on the outside' was cited as evidence of the bizarre state of affairs in the new land.

The fleshy stalk when yellow or orange is highly astringent, but when about to fall is sweet and palatable, and a deep red.

There are several other leafless species of *Exocarpos* in Australia. All these have fleshy fruit-stalks which vary in colour from white to lilac or red, and in form from disc-like to cylindrical. Only some of these are reported in the literature to be edible, but it is likely that all are harmless.
Distribution: Qld, N.S.W., Vic., Tas.

Exocarpos latifolius NATIVE CHERRY, BROAD-LEAVED NATIVE CHERRY

In appearance, plants of this species are quite unlike those of other Australian species of *Exocarpos*, having broad, dark green leaves with several longitudinal nerves. However the fruits, both in appearance and taste, are similar to those of *E. cupressiformis*. The small trees are mainly confined to rainforests and their environs.
Distribution: Qld, N.S.W., N.T.

FICUS Figs

Native figs are found in their greatest variety in northern rainforests; the number of species decreases southwards until there are only two species occurring in Victoria, one of these being an introduction from Queensland.

The fruits, which resemble those of the cultivated fig in general structure, are usually borne in pairs at the base of a leaf; however there are a few species, the cluster figs, which carry their fruit on short, leafless branches close to the trunk and main limbs, sometimes so densely as to obscure the bark almost completely.

Fruits vary from pea size to approximately 5 cm in diameter. All are edible but they vary greatly in quality. Compared with the cultivated fig most of them are dry, gritty and of poor flavour. Some people may be deterred by finding the remains of pollinating and parasitic wasps within the fruit but these are harmless and apparently flavourless.

A domestic fig gives no pleasure when it is hard and green, and the native figs likewise must be soft and pulpy before they are worth trying. Unfortunately, fruit-eating birds and bats are often on the scene early, and by the time the fruit is at its prime it has already been well sampled. The birds and bats distribute the seeds widely; some fall into crevices of branches or into staghorn ferns near the tops of rainforest trees where they germinate and grow into the so-called strangling figs. (See also p. 106.)

Ficus macrophylla MORETON BAY FIG

One of the best known figs in Australia is the Moreton Bay fig, a large tree of rainforests but often occurring also in eucalypt forests, where it frequently starts life in a hollow stump. It is one of the commonly cultivated native figs, although too large for most gardens. From a distance the tree may intermittently take on a rusty flush as a breeze disturbs the leaves to reveal the undersurface covered with red-brown hairs. Although not the best of the native figs, its fruits are acceptable when completely ripe and purplish.
Distribution: Qld, N.S.W., Vic.

Ficus coronata SANDPAPER FIG

Amongst the best flavoured native figs is *F. coronata*, one of the sandpaper figs whose exceptionally rough leaves were used by the Aborigines for the final smoothing of their weapons. Although this species is not classed as a cluster fig, some specimens bear a few fruits on the trunk and main branches as well as on the twigs. The fully ripe fruits, about 2·5 cm long, are purple-black, and the pulpy seed-mass approaches the quality of the domestic fig. A dense layer of rigid hairs on the skin of the fruit detracts from its attractiveness, but these hairs can easily be avoided.
Distribution: Qld, N.S.W., Vic., N.T.

Ficus racemosa (*F. glomerata*) CLUSTER FIG

Although occurring naturally only in the northern part of Australia, cluster figs are to be found in cultivation much further south. The large fruits, reddish when ripe, are borne in dense clusters on short, branched stalks from the trunk and main branches. Early settlers used this species to produce a good jelly; however Joseph Banks sampled what was probably this species while the *Endeavour* was being repaired in North Queensland, and he thought rather poorly of it: 'A kind of Figs growing from the stalk of a tree, very indifferent . . . '. Distribution: Qld, N.T.

Garcinia NATIVE MANGOSTEEN

G. mangostana, the mangosteen, is a tropical tree with opposite, leathery leaves. Its characteristic, rounded, reddish-purple fruit about 5 cm across has four persistent, fleshy calyx lobes at its base and, at its apex, a lobed, raised patch representing the old stigmatic surface. The thick rind contains several seeds surrounded by a delicious white pulp. It is seldom seen in Australia, and even in southeast Asia it is an expensive fruit. However, there are five native species of *Garcinia* in northern Queensland rainforests. They have probably only rarely been eaten by white men but *G. mestonii* (Meston's mangosteen) from Mt Bellenden Ker, with fruits about 7 cm across, is reported to be edible. We have no information on the edibility of the other species.
Distribution: Qld

Gardenia edulis LEICHHARDT'S BREAD-TREE,
BREAD-TREE OF THE LYND

During Leichhardt's expedition of 1844–45 he came across a useful small tree at the Lynd R. in northern Australia. In his journal entry for 31 May 1845 he wrote as follows: 'There was another small tree, the branches of which were thickly covered with bright green leaves; it had round inferior fruit, about half an inch in diameter, which was full of seeds: when ripe, it was slightly pulpy and acidulous, and reminded me of the taste of the coarse German rye bread. In consequence of this resemblance, we called the little tree the Bread tree of the Lynd. I ate handfuls of this fruit without the slightest inconvenience.'
Distribution: Qld, N.T.

Gaultheria SNOWBERRY, WAXBERRY

G. appressa and *G. hispida* are shrubs of rainforests and wet eucalypt forests in southern Australia, particularly in sub-alpine regions. The branches are covered with stiff reddish hairs, and the glossy leaves have slight impressions on the upper surface over the main veins. After the petals fall, the sepals enlarge and become fleshy to form a white or pale pink false fruit 8–10 mm broad which is edible but somewhat bitter.
Distribution: *G. appressa* – N.S.W., Vic.
G. hispida – Tas.

Grewia retusifolia (*G. polygama*) EMU-BERRIES

This small shrub, very widespread in tropical and subtropical areas of eastern Australia, has alternate, serrate leaves, usually hairy, with three conspicuous veins arising near the base. The small, two-lobed fruits look unpromising as a source of food; they are rather hard, usually brownish, and contain only a small amount of fibre-impregnated, acid pulp surrounding the seeds. Nevertheless, emu-berries were said to be valued by the Aborigines, and Leichhardt spoke of them as having 'a very agreeable taste'. On one occasion during his expedition he made from them what he considered a satisfactory drink: 'Whilst walking down by the lagoon, I found a great quantity of ripe Grewia seeds, and, on eating many of them, it struck me that their slightly acidulous taste, if imparted to water, would make a very good drink; I therefore gathered as many as I could, and boiled them for about an hour; the beverage which they produced was at all events the best we had tasted on our expedition; and my companions were busy the whole afternoon in gathering and boiling the seeds.'

The crushed leaves have been applied by Aborigines to an aching tooth to relieve the pain. Two other species, *G. brevifolia* and *G. orientalis*, also are reported to have edible fruit.

Distribution: *G. brevifolia* and *G. orientalis* – Qld, N.T.
G. retusifolia – Qld, N.S.W., N.T.

Hovea longipes PURPLE PEA

Shrubs of *Hovea* with their profusion of purple pea flowers are among the early-flowering spring wildflowers. The young pods of one species, *H. longipes*, were reported to be eaten by Queensland Aborigines, but whether raw or cooked was not stated. Other species may well have been used also.

Distribution: Qld, N.S.W.

Kunzea pomifera MUNTRIES, NATIVE APPLE

Muntries is a plant of dry sandy desert areas. It is a prostrate trailing shrub with short, rounded leaves and terminal heads of a few whitish flowers with long stamens. The fleshy, edible capsule is crowned by the persistent calyx.

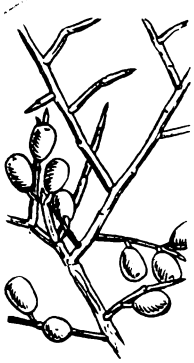
Distribution: Vic., S.A.

*Lantana camara** LANTANA

A useful, hardy garden shrub, some forms of this species have become widely naturalized over much of coastal eastern Australia. In Queensland and warmer parts of New South Wales they are a serious pest and cover large areas where the original vegetation has been disturbed.

The fruits are shiny black, round to ellipsoid, about 5 mm across; they are borne in a cluster at the end of the flowering stalk, from which they fall at a touch when quite ripe. The soft black pulp surrounding the stone has a distinctive and pleasant flavour, and although each fruit yields a small quantity it is usually possible to gather large numbers of fruits. Although some people believe the fruits to be poisonous, one of us has eaten them since early childhood without ill effect. There are certainly reports of children being made ill by eating lantana fruits but, probably, unripe fruits were involved in these cases.
Distribution: Qld, N.S.W.

Leptomeria CURRANT-BUSH



The species of *Leptomeria* are leafless shrubs, broom-like in appearance, and parasitic on the roots of other plants. There is considerable resemblance to *Exocarpos* but the fleshy, fruit-like stalk of the latter is absent and, instead, the fruit, crowned by the persistent calyx, has a fleshy layer surrounding the stone. The fruits, green, white or red, are perhaps too acid in the raw state for most tastes, but they can be improved by cooking with sugar. According to an early report, they 'make an uncommonly fine jelly'.

L. acida and *L. drupacea* have angular branchlets, but *L. aphylla* has rounded branchlets often ending in spines.
Distribution: *L. acida* – Qld, N.S.W.
L. aphylla – N.S.W., Vic., S.A.
L. drupacea – N.S.W., Tas.

Leucopogon parviflorus BEARDED HEATH

Leucopogon means white-bearded and this genus was so named because of the characteristic woolly mass of hairs on the petal lobes. These Australian heaths are shrubs or small trees, usually much branched and twiggy, and with small rigid leaves. Of the numerous species, three are reported to have edible fruits, but it is likely that this number could be increased.

L. parviflorus has rounded fruit about 5 mm long, yellow-green to white. J. D. Hooker, the eminent English botanist, described it as 'insignificant and barely edible', but the plant is of interest because of its connection with one of the early French naturalists who visited Australia. Riche was one of the naturalists who accompanied D'Entrecasteaux on his expedition in search of the missing La Pérouse. In December 1792 the ships *La Recherche* and *L'Espérance* anchored off the southern coast of Western Australia among a group of islands later to be known as the Archipelago of the Recherche. Riche joined a shore party but once on land 'became enraptured with the riches and novelty of all the productions of that region, which no observer had hitherto visited' and was soon lost. Eventually, 54 hours later, after he had been given up for lost by his companions, he wandered back to the landing place. His only food in that time had been some bits of biscuits and the fruit of *L. parviflorus*, which, not surprisingly, were 'insufficient for the supply of his necessities'. De Labillardière, botanist of the expedition, named the plant *Styphelia richei* but unfortunately the association of the name is now lost since the correct name for the plant is *Leucopogon parviflorus*. However, Riche is still commemorated in the genus *Richea* found mainly on mountains in Tasmania.

L. lanceolatus and *L. montanus* also are reported to have edible fruits.

Distribution: *L. lanceolatus* – Qld, N.S.W., Vic., Tas.
L. montanus – N.S.W., Vic., Tas.
L. parviflorus – All States

Linospadix monostachyus WALKING-STICK PALM

This small palm owes its common name to the fact that its stem is sufficiently slender to be used as a walking stick. The tight root-mass at the base can be trimmed to form the knob while the close-set, ring-like leaf scars provide the ornamentation.

Unlike the inflorescences of many other palms, that of the walking-stick palm is an unbranched, arching cane with closely packed flowers in groups of three, a female between two males. The fruit is up to 1 cm broad and when clearly red is edible; there is a variable amount of crisp, pleasant-tasting flesh surrounding the hard stone.

When a Stinson plane crashed in the Lamington National Park in Queensland in 1937, two survivors obtained a small amount of nourishment from these fruits until found by Bernard O'Reilly eleven days later.

In north Queensland, the more slender *L. palmerianus* and *L. minor* have similarly edible but smaller fruits. (See also p. 110.)
Distribution: Qld, N.S.W.

Lissanthe strigosa (*Styphelia strigosa*) PEACH HEATH

L. strigosa is one of the extremely prickly heaths, the slender rigid leaves ending in needle-like points. The white to pale pink flowers are inflated in their lower part, giving them the form of an urn. Its small white fruits, about 4 mm across, are said to be sweet and edible.
Distribution: Qld, N.S.W., Vic., S.A., Tas.

Lycium australe AUSTRALIAN BOXTHORN

Widespread in dry country, this low shrub has fleshy, grey-green leaves 5–15 mm long, with some of the smaller branches developed as spines. Its red, oblong berries, 6–10 mm long, were eaten by the Aborigines. Distribution: All mainland States

Melastoma polyanthum NATIVE LASIANDRA

The well-known garden lasiandra (*Tibouchina*) is characterized by its broad, deep purple flowers and distinctive, sickle-shaped stamens. Similar to this is the native *Melastoma polyanthum*, a soft-wooded shrub found in coastal eucalypt forests, particularly in some swampy areas. Its rough, hairy leaves with three prominent longitudinal veins help to distinguish it in the absence of flowers; the latter are rose pink, up to 3 cm diameter, and make the species a worthwhile garden subject. The rounded, flat-topped, bristly fruits contain numerous very small seeds embedded in a purple pulp which is sweet and pleasant to eat.

The name *Melastoma* was applied because the fruit of some species causes blackening of the tongue, and is derived from the Greek words *melas* – black and *stoma* — mouth.
Distribution: Qld, N.S.W., N.T.

*Mangifera indica** MANGO

One of the most popular of tropical fruits, the mango is very commonly found as a backyard tree in northern Australia but is less frequently grown in plantations, so it is a luxury when purchased in fruit shops. In moist tropical areas the tree, a native of India, has become naturalized and forms a welcome part of roadside communities, particularly in summer when the heavy crop of luscious fruit is ready. Fruit on trees growing wild is often of the stringy kind but of good flavour and most acceptable.
Distribution: Qld

Manilkara kauki WONGI

In the tropical coastal vegetation, wongi stands out because of its leaves which are dark green above, silky and almost white beneath; they are leathery and rigid, blunt and on relatively long stalks. The fruit is 3–4 cm long, orange-red, and has six persistent sepals at its base.

Opinions differ as to the quality of the fruit, which can be eaten raw or cooked; one author claimed them to be sweet but rather flavourless, another thinks they are by no means to be despised, and a third regards them as one of the best native fruits.
Distribution: Qld

Microcitrus australasica FINGER-LIME

The native Australian citrus all produce good edible fruits although they are much smaller than most of the cultivated representatives. *M. australasica*, found in rainforests, is a shrub or small tree with elliptical leaves 1–2 cm long and robust spines. The fruit is cylindrical, often slightly curved and about 6 cm long. Even when ripe it usually retains its green colour. If the fruit is cut across, the turgid pulp cells expand and separate, pushing out of the five or six longitudinal segments as a cluster of small glistening balls. For anyone who likes sour fruit these pulp cells are delicious; they burst pleasantly at slight pressure from the teeth and provide a most welcome refreshment.

The fruits also can be made into marmalade which not only has a pleasant flavour and distinctive perfume but is ornamental as well, the sliced rings of fruit looking like miniature cartwheels.

Use a recipe for lemon marmalade but reduce the amount of water added by about a quarter as the finger-limes have less pectin than lemons.
Distribution: Qld, N.S.W.

Microcitrus australis NATIVE LIME, NATIVE ORANGE

Also found in rainforests, *M. australis* is a taller tree than the finger-lime, and has larger leaves, 4–5 cm long. The green fruit is round rather than cylindrical, and up to 5 cm broad. Like *M. australasica* it can be eaten raw or made into marmalade. Its flavour resembles that of the finger-lime.
Distribution: Qld, N.S.W.

Microcitrus inodora NORTH QUEENSLAND LIME

A little-known plant from north Queensland rainforests, this citrus has oblong fruits about 6 cm long, reputedly of good quality.

F. M. Bailey, Colonial Botanist of Queensland, encountered this fruit on his ascent of Mt Bellenden Ker in 1889 and wrote that it was 'well worthy of cultivation for its fruit, which is juicy, and of equal flavour with the West Indian Lime.'
Distribution: Qld

Mimusops elengi TANJONG TREE

Although *M. elengi* belongs also to the family Sapotaceae, it shows little trace of the milky latex of many members of that group. It forms a small tree, bearing alternate elliptical leaves with the wavy margin curved upwards. The white flowers drop their petals in a star-shaped ring. The oblong, pointed fruits, approximately 3 cm long, are orange-red at maturity. The mealy, yellow flesh surrounding the large, dark brown seed is edible but astringent.
Distribution: Qld

Mistletoes

Mistletoes are parasitic shrubs of the family Loranthaceae growing on the branches of trees; there are many genera and species occurring in different parts of the world. At one time most of the numerous Australian mistletoes were treated as species of *Loranthus* but they have now been redistributed among various genera of which *Amyema* is one of the most important. *Amyema* is very common on eucalypts.

In the past mistletoe was esteemed as having magical powers, and it was associated with superstitions of the British Druids. Echoes of this 'magic' persist in use of the branches at New Year's celebrations. It was used widely in herbal medicine, and the famous herbalist Culpeper wrote of it as 'good for the grief of the sinew, itch, sores and toothache, the biting of mad dogs and venomous beasts'.

All the mistletoes have small berries, varying from about 0·5 to 1·5 cm in length. The ripeness of the berry is indicated not only by its softness, but often also by a slight translucence. When quite ripe the sticky, gelatinous, sweet pulp surrounding the single seed is pleasant to eat, but its great stickiness often makes the seed almost impossible to spit out. Birds have the same difficulty and may sometimes be seen wiping their beaks free of seeds against the branch of a tree; this, of course, places the seed in a favourable position for germination. The fruits are so sticky that those of one species have been used as bird lime.
Distribution: All mainland States

Morinda citrifolia GREAT MORINDA

A small fruit tree growing naturally along tropical shores is the great morinda. It has large shiny leaves in opposite pairs on the stem. The flower-buds are united into a head and the flowers come out a few at a time. At maturity, the compound fruit is shaped like a small irregular football up to about 6 cm in diameter, the limits of the individual fruitlets indicated by slightly depressed, diamond-shaped outlines. When ripe, the fruit is greenish-white and edible, although its powerful aroma, reminiscent of very rancid cheese, leads to difficulty in getting it past one's nose. Young leaves also are edible, raw or cooked.

The tree has been widely cultivated in tropical Asia, but more for the red, yellow and chocolate dyes obtained from the root than for the fruit. At one time the dye from this and other species of *Morinda* was extensively used in local dyeing of cloth, particularly the batik cloth of Java, but this has now been largely superseded by synthetic dyes.
Distribution: Qld, N.T.

Musa banksii NATIVE BANANA

The native banana of north Queensland rainforests closely resembles the cultivated banana but the fruit is much more slender, often only about 1 cm broad. Although edible, the amount of flesh present is small, the black seeds which have been bred out of the cultivated species taking up most of the space. Captain Cook's party sampled this at Endeavour R. but Joseph Banks was not impressed – 'a kind of Wild Plantain whose fruit was so full of stones that it was scarce eatable, . . . '.

Two other species of native banana from northern Queensland, *M. fitzalanii* and *M. hillii*, also have edible but very 'seedy' fruits.

Both the native and domestic bananas, if too green to eat raw, can be made edible by boiling or baking. (See also p. 108.)
Distribution: Qld

MYOPORUM

The genus *Myoporum* is strongly represented in Australia. Its species are shrubs or small trees with simple, alternate leaves and bell-shaped, regular white flowers with four stamens in the five-petalled flower. At least four of the Australian species have edible fruits.

Myoporum insulare COMMON BOOBIALLA, NATIVE JUNIPER, COCKATOO BUSH

This shrub or small tree of seashores and inland areas has small white flowers, purple-spotted on the inside. The fleshy fruits are rounded and bluish-purple; they are reported as edible, but somewhat salty and bitter.
Distribution: N.S.W., Vic., Tas., S.A., W.A.

Myoporum debile AMULLA

Amulla is a prostrate shrub of grassland in warmer parts of Australia. The leaves are slightly toothed and the petals are somewhat hairy on the inside towards the base. The fruit is ovoid, somewhat compressed, and pinkish red when ripe; it is edible but slightly bitter.
Distribution: Qld, N.S.W.

Myoporum deserti TURKEY-BUSH, DOGWOOD

This is an erect shrub with very narrow leaves found in dry inland areas; the flower-stalks are strongly recurved so that the flowers have a nodding habit; in this species there are five stamens rather than the usual four. Mitchell wrote of this bush which 'put forth sweet and edible fruit'. Fruits are yellow.
Distribution: Qld, N.S.W., S.A., W.A.

Myoporum montanum WATERBUSH, NATIVE MYRTLE

Another narrow-leaved shrub of inland areas, this species may be distinguished from the previous one by its erect flowers and purplish fruits. The fruits were eaten by the Aborigines.
Distribution: Qld, N.S.W., Vic., S.A., N.T.

Nitraria schoberi NITRE BUSH

In some arid regions, particularly in the south, the fruits of this shrub made an important contribution to the Aborigines' diet. Olive-like, and either red or purple, they are said to be slightly salty but to have a very pleasant flavour. A report of over a hundred years ago states that 'In December and January the bushes are so full of fruit, the natives lie down on their backs under them, strip off the fruit with both hands, and do not rise until the whole bush has been cleared of its load.'
Distribution: All mainland States

Omphacomeria acerba LEAFLESS SOUR-BUSH

Like several other root parasites of the family Santalaceae, this species has its leaves reduced to small scales. The plant is a wiry, broom-like shrub with grooved stems bearing rounded, purplish, edible fruits 6–8 mm long.
Distribution: N.S.W., Vic.

*Opuntia** PRICKLY PEAR

The biggest curse ever to come to Australia, in the opinion of many, was the weed known as prickly pear. This common name is actually applied to a number of cacti, but mainly to *Opuntia* species. Prickly pear is easily recognized by the thick green pads, which are leafless stems, bearing numerous groups of large spines up to about 3 cm long, and patches of fine, short bristles extremely irritating to the skin. The fruits are succulent, purplish-red and pear-shaped, 4–5 cm in length. They are worth eating but have the disadvantage of bearing bristles similar to those on the pads, so must be handled with care, and peeled before eating. A useful practice is to singe off the prickles with a flame first, as they are difficult to see after the fruit is cut; they are strongly penetrating and can cause a lot of discomfort, particularly in the mouth.

The pulp of the fruit is pleasantly acid, and contains numerous black seeds which are not eaten. The species vary in quality of fruit. The tree pear, *O. tomentosa*, which grows to a height of 7 m or more, produces fruit of much better flavour than does the pest pear, *O. stricta* (*O. inermis*), which forms low thickets.

Cookery books of earlier days published recipes for prickly pear jam and jelly. We have used them for a jelly which turned out a beautiful rose red, with a flavour rather like that of guava jelly. It was extremely mucilaginous, so much so that it was difficult to sever the trails coming from the jam-jar, and the jelly was difficult to spread on the buttered bread, tending to move with the knife over the surface.

Species of *Opuntia* were introduced into Australia in the days of convict settlement, some as garden novelties, some to provide food for the cochineal insect which was required to furnish red dye for the soldiers' red coats. By the early 1920's it had become the worst plant pest in Australia's history, enveloping the sub-tropical areas of eastern Australia. A dramatically successful control was brought about by the introduction of the *Cactoblastis* moth, a natural predator of *Opuntia*. It is now reasonably under control, but there are still enough plants to supply the fruit seeker. (See also p. 109.)
Distribution: *O. stricta* – Qld, N.S.W., Vic., S.A.
O. tomentosa – Qld, N.S.W.

Owenia acidula EMU-APPLE

Emu-apple is a well-known plant of some drier parts of Australia. It is a small attractive tree with a rounded crown of glossy, dark green, pinnate leaves. A tendency to sucker from the roots often leads to its occurrence in small groups. Its rounded red fruits, about 3 cm in diameter, are hard-fleshed, and although the deep red flesh surrounding the stone is edible it is intensely acid; there

are not many people who would enjoy it. One recommendation is that the fruit be buried for several days before eating; we think it could well be left buried.
Distribution: Qld, N.S.W., N.T.

Palaquium galactoxylum RED SILKWOOD, CAIRNS PENCIL CEDAR

The family Sapotaceae contains a number of species with milky latex; in one of these the latex is used as a base for chewing gum; another, a Malaysian species, *Palaquium gutta*, was an important source of gutta-percha, once used extensively in covering marine electric cables and in golf balls. Red silkwood is an Australian representative from northern rainforests which also produces a copious flow of latex from injuries. It is a tall tree with alternate leaves and rusty hairs covering young shoots. The yellow, egg-shaped fruit, up to 4 cm long, is reported to be very sweet and is edible raw. Another report claims that the Aborigines picked the fruit green and buried it for a few days before eating.
Distribution: Qld

Pandanus Screw-pine

Each branch of this small, sparsely branched tree is topped with a dense crown of sword-like, keeled leaves with forward-directed prickles along the margin. Most species characteristically produce a group of robust 'prop' roots from the lower part of the trunk. There are several species in Australia, some restricted to seashores, others to rainforests and still others to eucalypt country.

The common name is derived from the fact that the leaves are arranged spirally, and although the plant in no way resembles a pine, this common name is probably preferable to the often applied 'breadfruit'. The true breadfruit is a quite unrelated tree with a fruit which has a slight resemblance to that of *Pandanus*.

Fruits are globular or ellipsoid structures, almost as large as a man's head in some cases, and are made up of numerous bluntly wedge-shaped segments which fall separately when the fruit ripens and turns orange-yellow or orange-red. A small amount of sweet pulp can be obtained by chewing the fibrous semi-fleshy lower part of the ripe segment. However, depending on the species, mild to severe irritation to mouth and throat may follow.

The Aborigines destroyed the irritating principle by roasting the fruits before they chewed off the flesh or scraped it into water to make a sweet drink.

Leichhardt on his journey to Port Essington noted that the *Pandanus* fruit seemed to form an important part of the food of the Aborigines and, of course, tried it himself: 'I frequently tasted the fine-looking fruit of the Pandanus, but was every time severely punished with sore lips and a blistered tongue; and the first time that I ate it, I was attacked by a violent diarrhoea. I could not make out how the natives neutralized the noxious properties of the fruit which, from the large heaps in their camps, seemed to form no small portion of their food.' After further observations, he tried again: 'I, consequently, gathered some very ripe fruit, scraped the soft parts with a knife, and washed it until all the sweet substance was out, and then boiled it; by which process it lost almost all its sharpness, had a very pleasant taste, and, taken in moderate quantities, did not affect the bowels.'

Beneath the fibrous layer the fruit is hard and woody, with several longitudinal cavities each containing a single oily seed. The seeds make pleasant eating, but one requires a tomahawk to extract them. The Aborigines roasted the fruits before extracting the seeds but this may have been done mainly to make the shell more brittle for cracking. Eating the seeds raw has produced no ill effects in us.

The Brisbane suburb of Wynnum owes its name to the native name of one of the species. (See also p. 110.)
Distribution: Qld, N.S.W., N.T.

Parinari nonda NONDA

In the areas adjacent to the Gulf of Carpentaria this tree supplied an edible fruit which was said to be much eaten by the Aborigines, but which was apparently less acceptable to the white man's taste, being described as 'like a mealy potato, with, however, a trace of that astringency so common to Australian fruits'. It was one of the many local products that Leichhardt sampled on his expedition to Port Essington and he wrote in his journal that 'its fruit was an oblong yellow plum, an inch long and half an inch in diameter, with a rather rough kernel. When ripe, the pericarp is very mealy and agreeable to eat, and would be wholesome, if it were not so

extraordinarily astringent. . . . I found the fruit in the dilli of the natives on the 21st June, and afterwards most abundantly in the stomach of an emu.'
Distribution: Qld, N.T.

Persoonia GEEBUNG

The numerous species of *Persoonia* are shrubs or small trees which bear more or less cylindrical yellow buds often singly in the leaf axils. As the flower opens the four petal-like lobes roll backwards. At maturity the globose to elliptical fruit is yellow or yellow-green, and beneath the skin is a small amount of sweet pulp thoroughly impregnated with fibres from the hard stone. This pulp can be chewed off, although the operation is a little like nibbling sweet cotton-wool. Emus eat the fruits which pass through the bird almost without visible change.

One species, *P. media*, had the Aboriginal name of 'Geebung' which was adopted for a Brisbane suburb. There is now a tendency to apply the name to all persoonias.
Distribution: The genus is represented in all States.

Pipturus argenteus NATIVE MULBERRY

This small, soft-wooded coastal tree can usually be recognized by its long-stalked, toothed leaves with three prominent veins from the base, and with pale, finely hairy under surface. The true fruits are small brown structures partly embedded in a soft, roughly globular, translucent white body about 6 mm across. This fleshy part is sweet and juicy, and makes excellent eating.
Distribution: Qld, N.S.W.

Planchonella australis BLACK APPLE, WILD PLUM

Planchonella is a genus of trees with simple, alternate leaves, the stems often exuding a milky latex when cut. Their fleshy fruits are rounded to egg-shaped and contain one to a few seeds. These seeds are one of the most distinctive features of the plants; they are elongate, pointed at both ends, brown and shiny, and have a prominent scar extending almost their whole length.

P. australis has large, almost black, plum-like fruits up to 5 cm long, sometimes found in considerable quantities on rainforest floors. Animals evidently appreciate them as many of the fallen fruits are half eaten, to reveal the purple-red flesh.

We have found the fruits very unpleasant to eat raw, but they are said to yield 'a very fair jelly or preserve, frequently made in the country districts, where it is a prolific bearer'. However, it was admitted that the frequent occurrence of maggots was a drawback.

The inner bark of one species, whose specific name was not recorded, was eaten by the Aborigines of the Maroochy district in Queensland.

Other species whose fruits were eaten by the Aborigines, either raw or after roasting, are *P. arnhemica*, *P. brownlessiana*, *P. chartacea*, and *P. pohlmaniana*.

Distribution: *P. arnhemica* – Qld, N.T. *P. australis* – Qld, N.S.W.
P. brownlessiana – Qld *P. chartacea* – Qld, N.S.W.
P. pohlmaniana – Qld, N.S.W.

Planchonia careya COCKY APPLE

Cocky apple is a common tree of many eucalypt forests in areas extending north from a little south of Gladstone, Queensland. Its leaves, about 7 cm broad, turn bright orange-red as they age, and this helps in recognizing the tree. The short-lived flowers, with their numerous long stamens, open at night; the fruit is egg-shaped, greenish, 4–5 cm long and crowned by the persistent calyx. A fleshy pulp surrounds the several seeds.

Use of the fruit by the Aborigines seems to have varied from district to district. In the Gladstone area they are reported to have eaten the whole fruit raw; another report states that the fruits were roasted.

Distribution: Qld

Pleiococca wilcoxiana SILVER ASPEN

Among the many fruits found from time to time scattered over the rainforest floor, a fairly easily recognized one belongs to *P. wilcoxiana*. These fruits, about 2 cm broad, are round-conical, white or cream, and consist of 5–9 fleshy segments which are united only along their innermost side. They have a fresh, sour flavour, quite pleasant in small quantities but rather too aromatic to be eaten in large amounts. It would be worth trying them in jam.

Distribution: Qld, N.S.W.

Pleiogynium timorense **BURDEKIN PLUM**
(*P. solandri*)

This spreading tree with glossy, pinnate leaves bears purple-black fruits 3–4 cm broad, a little like flattened plums. The flesh around the large, ribbed stone is acid and of reasonable flavour only if completely ripe. Some have advocated burying the fruit for two days before eating. Captain Cook's party ate this fruit at the Endeavour R., and Banks's journal records that 'these when gathered off from the tree were very hard and disagreeable but after being kept for a few days became soft and tasted much like indiferent Damsons.' At one time this tree bore the name *Pleiogynium solandri*, commemorating Daniel Solander of the *Endeavour*.
Distribution: Qld

Podocarpus elatus **BROWN PINE**

Brown pine is a common rainforest tree belonging to the same major group as the pines, but differing from most other members in having no obvious cone. At maturity, there is a single, round, greenish seed seated at the apex of a larger fleshy stalk which resembles a purple-black grape with a waxy bloom. This fleshy stalk is edible but is rather mucilaginous and resinous in flavour. It has been described as 'amongst the best of the indigenous fruits' but we place it rather lower on the scale of excellence. We find jam or jelly more acceptable than the raw stalks, but the texture is stringy and mucilaginous.
Distribution: Qld, N.S.W.

Podocarpus spinulosus **NATIVE PLUM, NATIVE DAMSON**

In some coastal areas, particularly in sandy places such as parts of the wallum country of Queensland, *P. spinulosus* is a common shrub. Its sprawling branches may root where they touch the ground, leading to the formation of thickets. As with its relative of the rainforests, *P. elatus*, a round seed is borne at the apex of an edible, purplish, stalk-like structure. However, the very sharp, dagger-shaped leaves are a deterrent to the gathering of a fruit of rather doubtful quality.
Distribution: Qld, N.S.W.

Pouteria sericea

A dense layer of rusty hairs on the under side of the leathery, shortly stalked leaves helps to identify this shrub or small tree of tropical coasts. The fruit is 2–3 cm long; it becomes red and finally purple-black, and then the insipid flesh is edible.
Distribution: Qld, N.T.

*Psidium guayava** GUAVA

This native of North America is sometimes found in cultivation, but more often occurs as a naturalized member of a riverbank or roadside community in wet tropical or subtropical areas. The small trees bear heavy crops of yellow-skinned, pink-fleshed fruit with a distinctive aromatic scent. Guavas can be eaten raw and have a pleasant flavour; they have an unusually high Vitamin C content. However the numerous hard seeds in the pulp are a nuisance, as are the fruit-fly larvae very frequently encountered. The most popular use of the fruit is for guava jelly, one of the most delicious fruit jellies we have tasted.
Distribution: Qld, N.S.W.

Psychotria loniceroides

Rusty hairs covering the twigs, and pale hairs on the mature leaves help to identify this shrub of light rainforests and moist gullies. The small, leafy or scaly stipules, which occur on each side of the stem between the two leaves of each opposite pair, fall off very early but leave a prominent scar. There seems to be no record of the Aborigines eating the small cream fruits but we have found them edible and of reasonable flavour.
Distribution: Qld, N.S.W.

Psychotria simmondsiana

Also a rainforest shrub, this species differs from *P. loniceroides* in its small leaves usually under 5 cm long, sometimes hairless, and with small, glandular spots on the under surface. The small fruits were eaten by the Aborigines.
Distribution: Qld, N.S.W.

Randia fitzalanii

In the rainforests of northern Queensland *R. fitzalanii* is a fairly common tree. Its round or ellipsoid gooseberry-like fruits, 3–4 cm across, are crowned with the remains of the calyx. These fruits, with their small seeds embedded in pulp, were eaten raw by the Aborigines. There are several other species of *Randia* in Queensland, and their fruits provide scope for experimentation.
Distribution: Qld

Rhodomyrtus macrocarpa FINGER CHERRY

This broad-leaved shrub or tree of northern Queensland has a red, fleshy fruit about 3 cm long, something like an elongate *Eugenia* fruit but with several seeds rather than a single seed.

Because of its resemblance to *Eugenia* there is a possibility of its being eaten by mistake for that fruit. It was, in fact, reportedly eaten by the Aborigines and has been eaten also by white men without ill effects, but in some cases it has caused sudden and permanent blindness. The danger of children being affected was sufficient to justify the Queensland Department of Education preparing illustrated posters for distribution in northern Queensland schools warning of the dangers of eating this fruit.
Distribution: Qld

RUBUS Native Raspberries

Luscious red raspberries provide a delicious climax to any meal. It is not always necessary to purchase this luxury, as there are several native species all with edible red fruit. We must admit that the quality is not that of the cultivated raspberry, which has been selected and improved over many centuries; however some at least of the natives are well worth trying, and of course 'the price is right'. The flowers are white or pink with round petals and numerous stamens; most species have also that other raspberry character of sharp, hooked prickles on stems and leaves, which may dampen the enthusiasm of the collector to some extent.

Rubus rosifolius NATIVE RASPBERRY, ROSE-LEAF BRAMBLE

This is a more or less erect plant with arching canes, distinguishable by its pinnate, briar-like leaves. It is common round the margins of rainforests and in moist gullies where it often forms dense thickets. The fruit is a hollow, dome-shaped structure made up of a large number of small, bright red fruitlets each with its single seed. Of the Australian species this has the largest and most attractive-looking fruits.

Eaten raw, the raspberries are pleasant, but they do not quite live up to the promise of their appearance; compared with the domestic raspberry they are dry and insipid. However, stewed with sugar or made into jam, they become a product anyone would eat with pleasure.

The leaves seem an unlikely vegetable, but they have been reported to have been used as such in Indonesia.
Distribution: Qld, N.S.W., Vic.

Rubus hillii (*R. moluccanus*) NATIVE RASPBERRY

The simple, usually trilobed leaves distinguish this species. It is one of the most vigorous of the native raspberries, and the gathering of the sparsely borne fruit from the sprawling thickets is a matter of some difficulty. Distribution: Qld, N.S.W., N.T.

Rubus parvifolius NATIVE RASPBERRY, SMALL-LEAF BRAMBLE

R. parvifolius is a sparse, straggling scrambler often almost prostrate, widespread in eucalypt country in eastern coastal districts. Its leaves are 3–5-foliate, the upper surface with a crinkled appearance and the under surface pale with tangled hairs. Unlike those of *R. rosifolius* the individual fruitlets making up the rounded fruit are few in number but relatively large and juicy.
Distribution: Qld, N.S.W., Vic., Tas., S.A.

Rubus gunnianus MOUNTAIN RASPBERRY

This raspberry has the distinction of being described by Ronald Gunn, the early Tasmanian naturalist after whom the plant was named, as 'the finest fruit in the Colony'. The great English botanist J. D. Hooker, who named the species, also wrote highly of it as 'the best native fruit in Tasmania'.

Rubus gunnianus is a small plant with mainly underground stems developing tufts of leaves here and there, and sometimes forming patches up to 80 cm across. It is found only on Tasmanian mountains at altitudes over 900 m. Distribution: Tas.

Rubus moorei NATIVE RASPBERRY, BUSH LAWYER

R. moorei is a vigorous climber or scrambler found on the margins of rainforests or occasionally even within them. It is distinguishable from the other Australian species by having leaves with five diverging leaflets, usually without obvious hairs on the underside.
Distribution: Qld, N.S.W.

*Rubus fruticosus** BLACKBERRY, BRAMBLE

Introduced blackberries are probably the most widely used wild fruit growing in Australia. Occurring in pest proportions in many parts of temperate, coastal country, they have been for many years as familiar a sight along some Australian roadsides as in their native Britain. Thickets are however less common than formerly as they have been extensively sprayed with modern weedkillers.

Blackberries occurring in this country can be grouped together under the name *R. fruticosus*, although it is realized that the Australian population consists of several closely related species.

The glossy purple-black fruits which distinguish the introduced plants from the native raspberries are good to eat fresh, but probably more popular when cooked as jam or used in pies or other desserts, either alone or combined with apples.
Distribution: Qld, N.S.W., Vic., Tas., S.A.

SAMBUCUS Elder

Sambucus is represented in Australia by three shrubby species with opposite, pinnate leaves and toothed leaflets. One species is a European one naturalized in some areas, and the other two are Australian plants with small, round, fleshy fruits which were eaten by the Aborigines.

Sambucus australasica YELLOW ELDERBERRY

Light rainforest and wet eucalypt forest are the home of this soft-wooded shrub. Its creamy-yellow flowers borne in rather sparse clusters are followed by round, translucent, yellow fruits, about 5 mm across, which are juicy and have a mildly pleasant flavour.
Distribution: Qld, N.S.W., Vic.

Sambucus gaudichaudiana WHITE ELDERBERRY, NATIVE ELDER

Another species of shady places, this is a much softer plant than *S. australasica*, and it is further distinguishable by having leafy stipules and the lowest pair of leaflets close to the stem. It bears scented white flowers and cream fruits.

The jaw-breaking name commemorates Charles Gaudichaud, pharmacist of the voyage of the *Uranie* commanded by Louis de Freycinet; when the ship visited Sydney in November 1819 Gaudichaud was a member of a party that made a collecting expedition to the recently crossed Blue Mountains.
Distribution: Qld, N.S.W., Vic., Tas., S.A.

*Sambucus nigra** EUROPEAN ELDER, COMMON ELDER

This naturalized European species is distinguishable from the Australian representatives by its relatively broad leaflets usually not more than twice as long as broad, and by its black fruits which, although edible, are not particularly palatable. These fruits are used for making elderberry wine, which most people have heard of, although few Australians have actually drunk it.

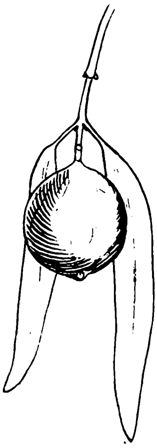
The stems contain a large central pith which at one time was used extensively by botanists for holding small specimens while sectioning them for microscopic study; by contrast, the surrounding wood is very hard and has been used for meat skewers and for the wooden pegs used in hand-made shoes. (See also p. 162.)
Distribution: N.S.W., Vic., Tas., S.A.

SANTALUM

The species of *Santalum* are small trees mainly restricted to dry country. Their usually opposite leaves are greyish in colour. The plants are partial parasites, their roots making parasitic contact with those of other species.

Santalum acuminatum QUANDONG, SWEET QUANDONG
(*Fusanus acuminatus*)

The round, pendulous fruits, 2–3 cm across, are crowned by the four small triangular lobes of the perianth, and at maturity change from green to bright red. The firm, fleshy layer surrounding the stone is edible when quite ripe; this stage is usually indicated by the fruit's falling to the ground or rattling when shaken. Although it is rather acid, the flesh can be eaten raw, but it is more often made into the highly prized pies, jams and jellies. The stones are easily removed at the 'rattly' stage, and the flesh can be dried and stored, needing only a few hours' soaking for subsequent use; it is even claimed that the flavour improves with storage.



These fruits seem to have been as popular with the Aborigines as they were with the white settlers. The Aborigines are reported even to have stored the dried flesh for future use, an unusual practice among those people.

The name quandong has been applied both to this species and to *Elaeocarpus grandis* which has blue fruits and a somewhat similar stone even more pitted and channelled. To avoid confusion the *Santalum* is sometimes distinguished as sweet quandong. The pitted stone is probably responsible for the less common name of native peach. During the Second World War stones of the sweet quandong were used as marbles substitutes in games of Chinese checkers marketed in Australia. (See also p. 92)
Distribution: All mainland States.

Santalum lanceolatum SANDALWOOD, NORTHERN SANDALWOOD, BUSH PLUM

The leaves of this small tree are usually more distinctly grey and the branches more pendulous than in *S. acuminatum*. Its fruits are smaller, only 6–9 mm broad, and are distinctive in having a scar encircling the top of the fruit. Sometimes reddish as they approach full size, the fruits are deep blue or blue-black at full maturity when the sweetish flesh is edible. Leichhardt found it 'of a very agreeable taste'.
Distribution: All mainland States

Sarcocephalus coadunatus (*S. cordatus*) LEICHHARDT TREE

This handsome large tree is a distinctive feature of the flora of northern Australia. Very frequent along the banks of creeks and rivers, it has often been saved when other trees have been cleared; it is conspicuous from a distance because of the horizontal branching and the large leaves which are glossy and often heart-shaped. The yellow flowers are densely packed on a globular head about 4 cm across, and are fused together in their lower parts so that the head is very compact; the projecting styles give the head the appearance of an attractive, well-filled pincushion.

The fruits are also united into a globular mass which is rough, soft and edible when ripe, although slightly bitter. They are reported as having been very popular with the Aborigines of northern Queensland.

Flowering occurs late in the dry season, and fruiting during the wet. Distribution: Qld, N.T.

Semecarpus australiensis TAR-TREE, MARKING NUT AUSTRALIAN CASHEW NUT

In the family Anacardiaceae there are several members which exude an irritant sap when wounded. An armful of mangoes, for example, leaves some people with an inflamed and itchy skin, and only minor contact with the poison ivy of North America can cause great discomfort. Among Australian members of the family, the tar-tree of the north has the worst reputation as a skin irritant, and has been known to cause severe dermatitis and painful blistering. In spite of this, the fruit, used with suitable precautions, is edible.

Fruits are similar to those of the cashew nut, which belongs to the same family. The true fruit is hard, brownish and one-seeded; this is seated on a larger, red or yellow fleshy structure. Both parts may be marked by black, lacquer-like stains where sap, escaping from small wounds, has dried and darkened. In fact, the presence of these black stains on various parts of the tree is a good guide to the identity of the species.

The fleshy section is reported to be edible raw but must be completely ripe, preferably picked up from the ground, and should have the skin removed. Even then there is the possibility of some irritation to the lips, so it is wiser to bake before eating as the Aborigines are reported to have done.

The wall of the true fruit, seated on the fleshy stalk, contains the resinous sap in abundance. The sap of the closely related marking nut tree of India, *S. anacardium*, was used in that country for the preparation of an indelible ink for marking cloth, the sap being first mixed with lime. The Aborigines were reported to have eaten

the seeds of the Australian species after the fruit had been roasted. According to another report, the irritant part of the fruit was removed by Aboriginal women who protected their hands with clay; subsequent preparation involved pounding, cooking and washing.
Distribution: Qld, N.T.

Solanum aviculare KANGAROO APPLE

This is a soft-wooded shrub of rainforest margins. Some of the leaves are slender and undivided, while others, particularly on younger parts, have one or more long lobes on each side. Its flowers are like those of tomato but much larger and of a handsome blue or purple-blue colour. The shiny, elliptical fruits 2–3 cm long change from green to yellow to bright orange-red, and at this stage contain a soft pulp with numerous small seeds. Although the berries are said to be edible when quite ripe, one of us finds them highly unpleasant both raw and stewed with sugar, while the other regards them as tolerable after cooking.
Distribution: Qld, N.S.W., Vic., Tas., S.A.

Solanum laciniatum KANGAROO APPLE

There has been confusion between the very similar *S. laciniatum* and *S. aviculare*. The most reliable distinguishing feature is in the fruit; in *S. laciniatum* the fruit becomes warty as it dries but in *S. aviculare*, although it may wrinkle, it never becomes warty. The fruit is said to be edible when fully ripe but we have not tried it.
Distribution: N.S.W., Vic., Tas.

STYPHELIA

Styphelia belongs to the family Epacridaceae, the family of Australian heaths. This is a group of mainly twiggy shrubs with small, rigid, often sharply pointed leaves. Many of them are important members of shrub communities on acid soil on both lowlands and mountains. The name Epacridaceae is derived from Greek words meaning 'upon a mountain'. In the Northern Hemisphere the closely related family Ericaceae, with its heaths and heathers, parallels the Australian group.

Styphelia adscendens GOLDEN HEATH

This is a more or less prostrate heath with needle-pointed leaves; it has distinctive yellow flowers with recurved, hairy petals and long, protruding stamens. The fleshy layer of the small, ribbed fruit is edible.
Distribution: N.S.W., Vic., S.A., Tas.

Styphelia triflora

Distinguishable from the preceding species by its erect growth and its pink and yellow flowers, the fruits of this species also have a sweetish flesh surrounding the large stone.
Distribution: Qld, N.S.W.

TASMANNIA

Australian species of *Tasmannia* are shrubs or small trees with male and female flowers borne in terminal clusters on separate trees. The rounded, purple-black berries are about 0·5 cm across.

Tasmannia lanceolata (*Drimys lanceolata*) MOUNTAIN PEPPER

A distinctive feature of this species is the bright red colour of the young branches. The lanceolate leaves taper gradually to the short stalk and vary considerably in size; those on lowland plants may reach 13 cm in length while those on alpine plants may be only 1·5 cm. All parts of the plant have a hot spicy flavour. The dried fruits have been used as a condiment; they are far too hot to be eaten alone.
Distribution: N.S.W., Vic., Tas.

Tasmannia insipida (*Drimys insipida*) PEPPER TREE

T. insipida is a shrub mainly of rainforests. Its leaves taper towards the leaf stalk as in *T. lanceolata*, but at the junction there is a sharp rather than a gradual transition. The flesh of the fruit is edible but insipid, in contrast to the seeds which have a very hot flavour.
Distribution: Qld, N.S.W.

Ximenia americana YELLOW PLUM

Armchair travellers think of coconut palms as the life-sustaining trees along a tropical coastline, but there is a considerable variety

of edible plants. The yellow plum is a spiny shrub or small tree growing along the beaches just beyond, and sometimes overhanging, high water mark. Its greenish-yellow flowers are sweetly scented. The round yellow fruit 2–3 cm across has a thin, edible flesh surrounding a large stone; in appearance and flavour the flesh is plum-like, but has the strong benzaldehyde aroma associated with bitter almonds. The seed is poisonous but the young leaves are edible after thorough cooking.
Distribution: Qld, N.T.

*Zizyphus mauritiana** CHINEE APPLE, INDIAN JUJUBE,
(*Z. jujuba*) CHINESE DATE

The lotus of Homerian legend had the amazing power of producing in those who ate it a dreamy lethargy with no ambition other than to feast forever on the delicious fruit:

Whoever tasted once of that sweet food
Wished not to see his native country more,
Nor give his friends the knowledge of his fate.

This wonderful plant, it has been suggested, was *Zizyphus lotus*, a plant of the eastern Mediterranean. In tropical Australia, there is another species of this genus, probably an early introduction, with larger and sweeter fruits than those of the lotus. This is the Chinee apple, a shrub or small tree, often somewhat umbrella-like in form and with pendulous twigs. Its leaves are elliptical with toothed margins and are uneven-sided at the base. The undersurface is covered with fine whitish to rusty hairs. One or two thorns usually occur at the leaf bases. The rounded fruits, about 2 cm broad, are yellow to brownish when ripe, and surrounding the large stone is a white, palatable pulp with a flavour akin to that of apples. This can be eaten raw or cooked, and also may be dried. In China, the species is reportedly widely cultivated and popular.

Zizyphus oenoplia WINE JUJUBE

Less common than the Chinese apple, this species from the northernmost part of Australia is a spiny, sprawling shrub with black, acid, edible fruit less than 1 cm broad.
Distribution: Qld

CLIMBERS AND SCRAMBLERS

BILLARDIERA

Billardiera is a genus of climbing plants limited to Australia and named after Jacques de Labillardière, a famous French botanist who visited Australia with d'Entrecasteaux on the expedition in search of La Pérouse.

Of the several species, two are known to have edible fruits and possibly others also could be used.

Billardiera scandens APPLE-BERRY

This slender twiner of moist eucalypt forests and heaths has leaves with a wavy margin, often silky on the underside. The pendulous flowers, tubular to bell-shaped, are usually greenish yellow, but sometimes purple. When ripe, the cylindrical berry is about 1·5 cm long and green or yellow, occasionally red. Its numerous small seeds are embedded in a sweet edible pulp.
Distribution: Qld, N.S.W., Vic., S.A., Tas.

Billardiera cymosa SWEET APPLE-BERRY

B. cymosa is found in drier country than *B. scandens*, and differs further in its usually mauve flowers borne in clusters rather than singly. The reddish berries were eaten by the Aborigines.
Distribution: N.S.W., Vic., S.A.

Calamus LAWYER VINE

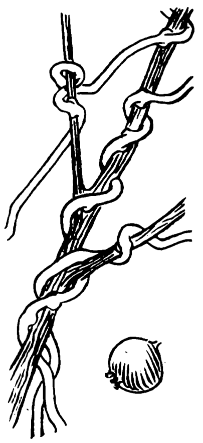
The lawyer vines are climbing palms of tropical and subtropical rainforests. These climbers are so formidably armed that to travel through a lawyer vine-infested forest is a painstaking and painful process. The leaf-bases sheathing the stem are clothed with needle-like prickles, and in some species the fronds also may bear needles or hooks on the underside of the midrib. Worse than these prickles are the long, slender, flexible thongs which may or may not bear a few fruits near their ends, and which dangle like fishing lines ready to catch the unwary passerby. They are armed throughout with numerous stout, very sharp hooks which penetrate flesh almost as easily as they penetrate clothing; and as one thong is unhooked another seems to take its place.

The reward for braving this armament is slight indeed. Round fruits roughly 1 cm across are covered with green or yellow scales which overlap from the apex downwards, rather than from the stalk upwards as might be expected. Between the scale and the seed is a very thin acid fleshy layer. In *C. muelleri* of southern Queensland and northern New South Wales this edible layer is so thin as to provide academic interest only. We have not tried the northern species, but the Aborigines were reported to have eaten the fruits of *C. moti* and to have made an acid drink by squashing the fruits of *C. australis* with water.

Even those unfamiliar with lawyer vines in the wild will have had some contact with *Calamus* since the material used in cane furniture comes from species of this genus.

Distribution: Qld, N.S.W.

Cassytha DODDER LAUREL, DEVIL'S GUTS



Seeds of the dodder laurel germinate in the soil, but the young plants soon make parasitic contact with some host and then lose the connection with the ground. The slender, yellowish stems twine round their living support putting in short parasitic roots at frequent intervals. Small, globose or elliptical fruits, slightly ribbed in some species, are crowned by the remains of the calyx. There is a small amount of aromatic flesh surrounding the central stone and this is edible although not of high quality in the ones that we have tried.

Distribution: All States

Cayratia clematidea NATIVE GRAPE

Among the native grapes this species is fairly easily recognized because of its soft, herbaceous nature; also, of its five coarsely toothed leaflets the outer pair on each side are borne on a common stalk. The small black grapes, about 5 mm broad, rounded and slightly broader than high, are juicy and reasonably palatable, approaching a poor domestic grape in quality. There may be a mild irritation of the throat some time after eating; the fruits are abundantly supplied with microscopic bundles of needle-crystals which are possibly the cause of the irritation.

Distribution: Qld, N.S.W.

Cissus NATIVE GRAPE

Quite a few Australian vines are popularly known as native grape. These include several species of the genus *Cissus*, all of them tendril climbers with the tendril opposite the point of attachment of the leaf. A few, such as *C. antarctica* which is sometimes grown as an indoor ornamental in Europe, have simple leaves, but in most the leaves are compound with 3–5 diverging leaflets. Some are restricted to rainforests and moist gullies, while others are found in coastal sand dunes or dry eucalypt country.

All have round or elliptical, purple-black fruits, 1–2 cm across, with considerable resemblance in appearance to a small domestic grape. But there the resemblance ends. We have found the taste of the species that we have sampled anything but pleasant and somewhat irritating to the throat. Nevertheless they were eaten by the Aborigines, and used by early settlers for making jam. Of *C. hypoglauca* it has been written, 'This grape would perhaps be greatly improved by culture.' We could add only, 'We hope so'. (See also p. 140.)

Distribution: *C. antarctica* – Qld, N.S.W.
C. hypoglauca – Qld, N.S.W., Vic.

Cucumis trigonus NATIVE MELON, NATIVE CUCUMBER

This is a small, native melon, widespread in inland areas, which formed an important food of the Aborigines. The rounded or ellipsoid fruits are 2–5 cm broad, and either smooth or sparsely hairy. Although the rind is exceptionally bitter the pulp is reasonably palatable. Major Mitchell encountered the species near the Gwydir R. on his expedition of 1831–32 and wrote of it as follows: 'In taste it resembled a cucumber, but that it was also very bitter. Mr. White and I peppered it, and washed the slices with vinegar, and then chewed it, but neither of us had the courage to swallow it.'

On his journey into tropical Australia in 1846 Mitchell found the Aborigines using the fruit and wrote in his journal that 'their food consisted of the fish of the river, ducks, and the small indigenous melon, *Cucumis pubescens*, which grew in such abundance that the whole country seemed strewn with the fruit, then ripe, and of which the natives eat great quantities, and were very fond.'

PLATE I
1 Davidson's plum *p. 27*
2 Bitter-cress *p. 117*
3 *Achronychia p. 21*
4 Supplejack *p. 113*
5 Burdekin plum *p. 51*

Edward Palmer, who recorded the Aborigines' use of numerous Queensland food plants, wrote of it as follows: 'Grows in great quantities after the wet season, remaining round for months after the small vines have entirely disappeared. The natives roll the stalks and fruit on the ground to free them from their hairy covering; they bite off one end and press the pulpy substance and seeds into their mouth, and throw away the outer rind, which is bitter; also used roasted. The fruit is made use of by the whites.' Distribution: Qld, N.S.W., N.T.

Cynanchum floribundum

Aesculapius, the Greek god of medicine, is remembered botanically in the family Asclepiadaceae, which includes some plants of medicinal use but many more which are poisonous. When we hear that *Cynanchum* belongs to this poisonous family, and further that its name means 'would strangle a dog', we are not immediately attracted to it as a food plant. Nevertheless, the unripe, milky pods of the twining *C. floribundum* were eaten by the Aborigines. Distribution: Qld, S.A., W.A., N.T.

Freycinetia propinqua

Named after Captain Freycinet of the *Uranie*, a French vessel which visited Australia early in the nineteenth century, *Freycinetia* is a rainforest genus of climbing or straggling plants closely related to *Pandanus*. Male and female flowers are produced in dense spikes on separate plants. The fruits are showy, being bright red and borne in spikes, usually three together, subtended by red bracts.

The fruits are softer and more fleshy than those of *Pandanus*. Those of *F. propinqua* are known to be edible raw, and it is probable that the other species of *Freycinetia* also have edible fruit. Distribution: Qld

Leichhardtia leptophylla DOUBAH

(L. australis)

This twining plant, known to the Aborigines as doubah, has a wide distribution through the drier parts of Australia. The slender, opposite leaves, 4–10 cm long, are borne on pale, hairy stems which exude a milky latex when cut. Fruits are up to 8 cm long with the form of an elongate, pointed egg. At maturity they split to release a large number of flattened black seeds, each with a tuft of silky hairs.

According to Captain Charles Sturt, who encountered this plant on his expedition to central Australia in 1844–6, the Aborigines ate the fruit, rejecting the seeds. However, Sir Thomas Mitchell found that they ate the entire fruit, preferring it roasted. This difference may have been due to different treatments in different areas or perhaps to different stages of maturity of the fruit.
Distribution: Vic., S.A., W.A., N.T.

*Momordica charantia** BALSAM-PEAR, CARILLA FRUIT

Although not a native of Australia, this tendril climber of the pumpkin family is naturalized in parts of northern Australia. Its somewhat spindle-shaped fruits are yellow, ribbed and warty, and although edible are bitter. The ripe pulp surrounding the seeds is reported to have a pleasant flavour. In India the fruit is commonly pickled. Like those of other members of the pumpkin family, the young stems and leaves may be boiled for use as a green vegetable, but these parts also are said to be bitter.
Distribution: Qld, N.T.

Muehlenbeckia gunnii MACQUARIE VINE, MACQUARIE GRAPE

Macquarie vine is a woody, twining plant, sometimes prostrate but often climbing over other plants in moist forests. It bears alternate, broadly lanceolate leaves and sprays of small cream-green flowers in their axils. As the fruit matures the calyx becomes fleshy and acid. In the early days it was used by settlers in Tasmania for 'tarts and preserves'.
Distribution: Tas., S.A.

Operculina turpethum (*Ipomoea turpethum*)

In northern Australia, one of the largest of the *Convolvulus*-type plants is *Operculina turpethum*, a vigorous climber with broad, heart-shaped leaves up to 15 cm broad, and large white flowers. Edward Palmer, who recorded the Aborigines' uses of numerous Queensland plants wrote of it: 'The young buds are eaten raw when the seeds are white; they are very plentiful after the wet season, and are gathered by white people and boiled for peas.' We have not tried

the species, but Palmer's reference to seeds in young buds suggests that what he was referring to was not the flower-bud but the developing fruit; after the petals fall the overlapping sepals become fleshy and cream coloured forming a rounded structure about 3 cm broad with a distinctly bud-like appearance.
Distribution: Qld, N.T.

PASSIFLORA Passionfruit

There are both native and naturalized species of passionfruit in Australia. All are tendril climbers, bearing very characteristic flowers with a ring of slender appendages on the corolla, and a long-stalked ovary.

*Passiflora edulis** PASSIONFRUIT

This vine, the source of the commercial passionfruit, is commonly naturalized round the margins of rainforests where good crops can sometimes be collected if one is prepared to brave the raspberries and stinging nettles which often occupy similar positions.
Distribution: Qld, N.S.W.

*Passiflora suberosa** CORKY PASSION-FLOWER

The most slender of the passion-vines, this is a minor weed in some areas. It is distinguishable by the corky flanges on old stems and by its small black fruits only about a centimetre broad. When quite ripe, they are edible but of inferior quality.
Distribution: Qld, N.S.W.

*Passiflora foetida** LOVE-IN-THE-MIST PASSION-FLOWER, STINKING PASSION-FLOWER

A distinctive feature of this naturalized species is the much-divided, spidery calyx which is responsible for the first of the two common names. The yellow fruits are edible but the quality is much inferior to that of *P. edulis*. Distribution: Qld, N.S.W.

Passiflora herbertiana

We have not tried this native species whose fruits reach about 5 cm in length but, according to one early report, it 'affords a grateful flavour'. Distribution: Qld, N.S.W.

Piper NATIVE PEPPER

Piper is a large genus of climbing plants. The seeds of *P. nigrum* from Malaysia furnish the condiment pepper, leaves of *P. betel* are chewed with betel nut in tropical Asia, and *P. methysticum* is used in the preparation of the Polynesian intoxicating drink kava.

In Australia there are several native species, most of them restricted to Queensland rainforests but one, at least, extending into New South Wales. They are tall climbers with ovate, pointed leaves, in some cases heart-shaped at the base. In the young stages they are attached to a tree-trunk by numerous roots, but eventually become free from the original support to form some of the stoutest lianas of the rainforest. The rounded, red fruits 4–5 mm broad, on short, slender stalks, are borne densely along an axis which falls at maturity, so that the small bunches of fruits can be found littering the forest floor beneath the vine.

Fruits of only *P. rothianum* have been recorded as edible but we have tried those of *P. novae-hollandiae* and found them to have a flavour reminiscent of Brazilian cherries. The seeds have a 'hot' aromatic flavour, and we have ground them for use as an acceptable pepper.

Distribution: *P. novae-hollandiae* – Qld, N.S.W.
P. rothianum – Qld

Pothos longipes

P. longipes is one of the commonest root climbers of tropical and subtropical rainforests in Australia; with its slender stems firmly attached to the supporting trunk it reaches to a height of up to 6 m. The peculiar leaves immediately distinguish the species; the winged leaf-stalk is of about the same diameter as the blade, so that there is an appearance of a leaf-blade with a deep constriction somewhere along its length.

The fruits are borne in a fleshy spike about 5 cm long, and on the one spike there are commonly both the inconspicuous flowers and the mature, bright red elliptical fruits about a centimetre long. The fleshy layer surrounding the seed was eaten by the Aborigines either raw or roasted but we have found it rather insipid.

Distribution: Qld, N.S.W.

Rauwenhoffia leichhardtii (*Melodorum leichhardtii*)

Most parts of this vigorous climber are usually out of sight in the tops of rainforest trees. The alternate, simple leaves are not distinctive, but if young branches can be found they can usually be identified as belonging to this species by the characteristic looping of some of the branches to serve as a sort of tendril. The yellow fruits are sometimes found littering the forest floor in considerable quantities. They are about 1·5 cm broad, taper into the stalk, and are rounded or more often elongate with a slight constriction between upper and lower parts. The soft pulp is reasonably palatable and was eaten by the Aborigines.
Distribution: Qld, N.S.W.

Tetrastigma nitens NATIVE GRAPE

Easily the best of the native grapes that we have tried, *Tetrastigma* has a flavour strongly resembling that of the cultivated grape. It is a vigorous climber with trifoliate leaves and it is found growing mainly in the rainforest. The species is not easily distinguished from some plants of *Cissus* unless the flowers are available; then the large, four-lobed stigma of *Tetrastigma* contrasted with the minute stigma of *Cissus* provides a ready distinction. However, in the absence of flowers, *Tetrastigma* may be distinguished by the taste of the fruit. There are no poisonous native grapes so it is safe to try any, and continue eating if they are acceptable.
Distribution: Qld, N.S.W.

HERBS

Astelia alpina PERCHING LILY, SILVER ASTELIA, PINEAPPLE GRASS

High mountains, and particularly the boggy areas on those mountains, are the home of this species. Its rosettes of hard, tapering leaves, 7–15 cm long, often occur in matted patches. The female plants bear bright red, oblong, small fruit which are edible.
Distribution: N.S.W., Vic., Tas.

Carpobrotus PIGFACE

Species of *Carpobrotus* are prostrate plants with fleshy opposite leaves, triangular in section, sometimes becoming reddish with age. The showy purple flowers have numerous, narrow, strap-shaped petals. Coastal dunes are the usual habitat of *Carpobrotus*, but some are found in dry inland areas. There are six species native to, or naturalized in Australia, and the fruits and leaves of some of them were used by Aborigines and explorers. However, until recently knowledge of the species has been confused, so the true identity of some plants reported in the past is not always certain.

C. glaucescens is one of the early colonizers of coastal sand dunes in New South Wales and Queensland. The elongate, purple fruit is crowned with the remains of the sepals and petals. When quite ripe, the fleshy pulp, containing numerous small seeds, can be squeezed out and eaten; its flavour, rather like salty apples, is quite enjoyable, and we think puts it among the native fruits most worth eating. The leaves also are edible when cooked but have nothing special to recommend them, and we found that, after a time, they caused slight irritation to the throat. Juice from the fresh leaves of this plant has been used in Queensland to relieve the stings of the biting midges and the Portuguese man-of-war; a related South African plant has been found to contain mesembrine, which has a physiological action similar to, but weaker than, cocaine, and this perhaps gives a significance to the Queensland practice.

Edward John Eyre, on his remarkable journey of exploration in 1840–41 from Adelaide to King George Sound, encountered a species of *Carpobrotus*, probably *C. rossii*, near Fowler's Bay, and wrote enthusiastically of it: 'It was in full fruit, and constituted a favourite and important article of food among the native population. All our party partook of it freely, and found it both a wholesome and an agreeable addition to their fare. When ripe, the fruit is rich, juicy, and sweet, and about the size of a gooseberry. In hot weather it was most grateful and refreshing. I had often tasted this fruit before, but never until now liked it;'. Later, on the same journey, he wrote again of *Carpobrotus*: 'It is eaten as a sort of relish with almost any other kind of food. That which grows upon the elevated tablelands is preferred to that which is found in the valleys. It is selected when the full vigour of the plant begins to decline, and the tips of the leaves become red, and before the leaf is all withered. The fruit is used both when ripe and also after it has become dried up and apparently withered.'

Some Aborigines in the southern part of Australia were reported to have used the saline leaves with meat as a substitute for salt.

Distribution: The genus is represented in all States
C. glaucescens – Qld, N.S.W.
C. rossii – Vic., Tas., S.A.

*Duchesnea indica** INDIAN STRAWBERRY

This is an introduced species, grown as an ornamental, which has become naturalized in moist places in a few areas of eastern Australia. In appearance, it is obviously a strawberry, but differs from the commonly cultivated one in its yellow flowers and small, almost round, firm fruits with the achenes standing out prominently from the red receptacle. The fruits are edible but are much inferior to those of the domestic strawberry.

Distribution: Qld, N.S.W., Vic.

Marsilea drummondii NARDOO

Stories abound in Australia's short history of white men who have starved to death in the bush where Aborigines have lived for centuries. The best known of these tragic stories is that of the ill-fated Burke and Wills who perished at Cooper's Creek in 1861; one of their party, King, survived, partly due to the ministrations of friendly Aborigines who, as we all learnt in school, showed him how to use nardoo. This tale has made nardoo one of the most famous of our native plants.

Marsilea drummondii is a fern, but in appearance resembles most a four-leaved clover. It is aquatic, rooted in mud and with the leaflets projecting above the surface of the water; leaflets are 1–2 cm long, and silky due to appressed hairs which help prevent wetting of the surface.

In most ferns, spores are produced in small, thin-walled spore-cases on the back of the leaves, but in *Marsilea* there is an adaptation to the aquatic environment in that these cases are contained in a thick-walled sporocarp; this is a hard, almost woody body about the size of a split pea, produced on an underwater stalk that terminates a few centimetres above the mud. The spores which are inside this sporocarp are rich in stored starch, and it is this which supplies the food value.

Although small, the sporocarps may sometimes be found in great numbers, and it has been said that they can be swept up in large quantity from dried swamps. The Aborigines ground them between two stones, and removed the black husks to leave a yellow starchy powder which could be made into cakes. Professor Ewart, the former Government Botanist of Victoria, was far from flattering in his account: 'In time of scarcity the sporocarps of *Marsilea* are ground into a yellowish flour by the Aborigines. Cakes made from it are astringent, contain tannin, and are highly indigestible. The blacks will not touch them when wheat flour is available, and Burke and Wills starved to death on this "food".'

Wills wrote in his journal; 'I cannot understand this nardoo at all, it certainly will not agree with me in any form. We are now reduced to it alone, and we manage to get from four to five pounds per day between us. . . . It seems to give us no nutriment. . . . Starvation on nardoo is by no means very unpleasant, but for the weakness one feels and the utter inability to move oneself, for as far as the appetite is concerned, it gives me the greatest satisfaction.'

Marsilea drummondii occurs throughout mainland Australia; it is found especially in the interior, but is not restricted to areas inaccessible to the majority of the population. There are several other species also, some occurring in coastal districts. We have not had the opportunity to try the true nardoo, but have prepared the similar *M. mutica*; we ground the dried sporocarps, sifted out as much as possible of the hard coats, and mixed the resulting meal with water to fry as a 'nardoo pancake'. Although rather gritty, it was quite acceptable as food, with a bland starchy taste.

Distribution: *M. drummondii* – All mainland States
M. mutica – Qld, N.S.W., S.A., W.A., N.T.

*Physalis peruviana** CAPE GOOSEBERRY

Cape gooseberries are common plants of cultivation in the warmer parts of Australia; they are not a major commercial fruit but are grown in marketable quantities in some areas, being popular especially for jams and pies; in the latter case they are better cooked with an equal amount of apple.

Plants have become naturalized in a number of places, and in some areas are important members of a roadside community or a rainforest margin. A soft sprawling shrub less than a metre in height, it has greyish, hairy leaves and five-petalled yellow flowers with purple blotches. The striking feature is the fruit which has an inflated papery calyx completely enclosing the delicious yellow berry.
Distribution: All mainland States

Physalis minima NATIVE GOOSEBERRY

Closely related to the introduced cape gooseberry, the native species is much less hairy and has smaller flowers than *P. peruviana.* The fruit is similar, and is edible.

P. minima occurs in tropical America, Asia and Africa as well as northern Australia, and is reported to be very common in eastern India. It is a plant particularly of sandy river flats.
Distribution: Qld, N.S.W., N.T.

Sarcozona praecox

A fleshy plant of mainly sandy, inland areas, *S. praecox* has the same general appearance as *Carpobrotus*. However, it can be distinguished by the doming of the surface cells of the leaves, which imparts a roughened appearance, and by having only 4–5 ovary cells compared with the 6–15 of *Carpobrotus*. The fleshy fruits are edible. Distribution: N.S.W., Vic., S.A., W.A.

Sesbania benthamiana SESBANIA PEA

A rapidly growing tall annual, occasionally almost 3 m tall, this species may be seen as a weed in old cultivation and on roadsides. The pinnate leaves have numerous (20–50) pairs of leaflets. Its small, yellowish, pea-like flowers are followed by slender pods with small beans which were eaten by the Aborigines, who also used the dried stems as fire drills.

A related species, *S. grandiflora*, found in northern Queensland, has been used in southeast Asia where flowers, young leaves and young fruits are cooked as a vegetable. Distribution: Qld

*Solanum nigrum** **BLACK NIGHTSHADE**

Black nightshade is an annual plant of the tomato family, producing small, white, star-like flowers with yellow centres which are followed by round, black, dull berries 5 mm in diameter; although the individual fruits are small the plants produce heavy crops, and a satisfying number can usually be picked. The minute seeds are swallowed with the juicy fruit, which should be eaten only when it is quite ripe. Immature berries which are green or light purple in colour contain the toxic alkaloid solanine, which is the poisonous principle in green potatoes; this, together with the common name of nightshade has made many people regard the ripe fruit too with suspicion, but this is quite unnecessary. The flavour is good, reminiscent of a sweet tomato.

A similar species, *S. nodiflorum*, widespread in eastern states, has shiny fruits, also edible. In addition there are several other species which were eaten by the Aborigines. Whenever trying *Solanum* berries always make sure that they are completely ripe.

Distribution: *S. nigrum* – All States
S. nodiflorum – Qld, N.S.W., Vic., W.A.

OTHER FRUITS

The following species are reported in the literature to have edible fruits, most of the reports being based on Aboriginal use. In some cases, no information is available on the preparation, if any, which the fruit underwent prior to eating. It is possible that, in some cases, the untreated fruit would be poisonous. It is also possible that in some cases it was the seed only which was used.

Acacia holosericea: Qld, N.T.
Alangium villosum: Qld, N.S.W.
Barringtonia racemosa: Qld
Canthium latifolium: Qld, N.S.W., S.A., N.T.
Canthium odoratum: Qld, N.S.W.
Carallia brachiata: Qld, N.T.
Carissa lanceolata: Qld, N.T.
Cathormion umbellatum (*Pithecellobium moniliferum*): Roasted; Qld, N.T.
Cayratia trifolia: Raw; Qld, N.T.

Celtis philippensis: Raw; Qld, N.T.
Dallachya vitiensis: Qld
Diospyros australis: Qld, N.S.W.
Drypetes australasica (*Hemicyclia australasica*): Qld, N.S.W.
Ehretia acuminata KODA TREE: Qld, N.S.W.
Elaeagnus latifolia MILLAA MILLAA: Raw; Qld
Endiandra tooram: Qld
Exocarpos aphyllus LEAFLESS BALLART: All mainland States
Exocarpos strictus PALE-FRUIT BALLART: N.S.W., Vic., Tas.
Faradaya splendida: Raw; Qld
Fenzlia obtusa: Qld
Ganophyllum falcatum: Qld, N.T.
Geniostoma rupestris: Qld
Ixora klanderana: Qld, N.T.
Lagenaria siceraria: After preparation; Qld
Lissanthe sapida NATIVE CRANBERRY: N.S.W.
Melodinus australis: Qld, N.S.W.
Melodinus bacellianus (*M. murpe*): Raw; Qld
Microcitrus garrawayae: Raw; Qld
Omphalea queenslandiae: Qld
Opilia amentacea: Qld, N.S.W., N.T.
Pimelea microcephala MALLEE RICE FLOWER: All mainland States
Planchonella obovata: Qld
Polyalthia nitidissima: Qld, N.S.W.
Pouteria castanospermum: Qld
Pygeum turnerianum: After preparation; Qld
Rapanea crassifolia: Qld, N.S.W.
Rapanea subsessilis: Raw; Qld, N.S.W.
Scaevola spinescens PRICKLY FAN-FLOWER: All mainland States
Schizomeria ovata WHITE CHERRY: Qld, N.S.W.
Securinega virosa: Qld, W.A., N.T.
Solanum chenopodium: Qld, N.S.W., S.A., N.T.
Solanum ellipticum: Qld, N.S.W., S.A., W.A., N.T.
Solanum esuriale: Raw or roasted; All mainland States
Solanum opacum: Raw; Qld, N.S.W., Vic., S.A.
Solanum simile OONDOOROO: Qld, N.S.W., Vic., S.A., W.A.
Solanum vescum KANGAROO APPLE: N.S.W., Vic., Tas.
Ternstroemia cherryi: Raw; Qld
Vitex glabrata: Qld, N.T.

3 Seeds

WHEN A SEED BEGINS to germinate, there is an interval of time before the young embryo has developed sufficient green tissue to produce all of its own food. During this period the developing plant uses reserves of food that were laid down in the seed. These reserves are principally in the form of starch, although some also are rich in proteins and oils. The amount of food in different seeds varies; those which contain large reserves are frequently used by man as food. Embryos themselves are useful items of diet as they are often valuable suppliers of vitamins; the wheat germ used as a health food is the embryo of a grass seed.

Not all seeds are of benefit to man as food. In some the presence of poisonous principles such as those which liberate prussic acid, or of bitter ingredients, makes the seeds inedible.

TREES AND SHRUBS

ACACIA Wattle

A wattle is Australia's national flower, and it is as beautiful flowering trees and shrubs rather than as a source of food that the wattles, as a group, are known.

The fruits and seeds of the wattles are generally thought of as being either poisonous or, at least, non-edible, and even domestic animals seem to reject most of them. One of us once nipped between the teeth a green, caterpillar-like pod of *A. cunninghamii*, and the small amount of juice reaching the throat caused intense discomfort for hours. However, there are exceptions; sheep eat the pods of *A. farnesiana* (prickly Moses) and *A. cambagei* (gidyea), and seeds or fruits of approximately a dozen are recorded as having been eaten by the Aborigines. In most cases, it was the seed which was recorded as having been eaten, and even in those cases where the fruit was mentioned it may have been only the seed which was actually eaten. Since there are well over 300 species of *Acacia* in Australia, it is likely that some, possibly many, others also were used.

Acacia farnesiana PRICKLY MOSES

The name prickly Moses seems to be a corruption of prickly mimosa, the name mimosa being sometimes incorrectly applied as a common name to species of *Acacia*. This spreading, densely branched shrub with bipinnate leaves is certainly well provided with robust, paired spines which give excellent protection to the finches which commonly use it as a nesting site. It is mainly an inland plant, and in some areas is very common along watercourses that are dry for most of the time. The globular, yellow flower-heads are highly perfumed, and in the south of France this species is cultivated extensively for the production of Oil of Cassie, a costly oil with an odour of violets, used extensively in the perfume trade. An initial process in extraction of the oil involves soaking the globular, yellow flower-heads in melted fat for several hours.

The cylindrical, dark brown pods have hard grey seeds embedded in a pithy substance. It is recorded that the Aborigines ate the pods after roasting.

Distribution: Qld, N.S.W., S.A., W.A., N.T.

Acacia aneura MULGA

Ornaments made from the wood of mulga must rank not far behind toy koalas among the typically Australian souvenirs which leave the country in tourists' bags. The hard wood was used by the Aborigines for more practical objects such as boomerangs, digging sticks, spears and shields. In fact, 'mulga' was a name given by the Aborigines to a narrow shield made from *Acacia* wood. This important plant produced also some of their food; one tribe of the Cooper's Creek area was reported to have eaten the seeds, and the practice was probably widespread. *Acacia* seeds are very hard so it is likely that, unless they were used at an immature stage, the mulga seeds would have been ground and possibly cooked before being eaten.

A large succulent gall produced by the tree and known as

mulga apple was 'said to be very welcome to the thirsty traveller'.
Distribution: Qld, N.S.W., S.A., W.A., N.T.

Acacia longifolia var. *sophorae* **BOOBYALLA, COAST WATTLE**
(*A. sophorae*)

James Backhouse, the Quaker who visited Australia in 1831–38 and recorded the Aborigines' use of several plants, wrote of this coastal species, 'The natives of Tasmania used to roast the ripening pods of this wattle, pick out the seeds and eat them'.
Distribution: Qld, N.S.W., Vic., Tas., S.A.

Acacia stenophylla **EUMONG**

Sir Thomas Mitchell, on his expedition to inland tropical Australia in 1846 wrote of the species, '. . . I found many of the same pods roasted at some fires of the natives, and learnt from our guides that they eat the pea.'
Distribution: All mainland States

Aleurites moluccana **CANDLE-NUT**

A tall tree of northern Queensland rainforests, this species is found in gardens much further south. Its leaves are ovate-lanceolate to somewhat diamond-shaped, and young ones have a silvery, powdered appearance, particularly when seen from a distance. Leaves on young specimens and on some lower branches may have three to five lobes and be heart-shaped at the base. The fruit is 5–8 cm broad and contains one to three large seeds with a thick, ridged shell which requires a hard blow to shatter. There is sufficient oil in the kernel to cause it to burn with a smoky flame, and to justify its use at one time as a primitive candle by some native peoples of the Pacific who strung the kernels together on sticks.

The candle-nut has been a source of food for both the Aborigines and other Pacific peoples. Before eating, the seeds should always be roasted, as the raw nuts have been known to cause illness. In the cooked condition they certainly make a pleasant nut, but probably should be taken in only moderate quantities.

The fruit is an important food of the cassowary.
Distribution: Qld

Araucaria bidwillii BUNYA PINE

When the surveyor-explorer John Oxley visited the Moreton Bay area in 1823, he was surprised to meet two white men, Pamphlett and Finnegan; they were convicts who had been blown off course in their boat from Sydney, and had eventually come ashore on Moreton Island. The third survivor of this incident, Parsons, was not with them, as he had gone with his Aboriginal companions to a 'bunnia feast'. This was the first acquaintance of white men with the bunya tree, but it had been known and appreciated for its delicious nuts for centuries by the Aborigines.

Araucaria bidwillii was a common tree in the rainforests of south-east Queensland from the Bunya Mountains near Dalby to the Burnett River on which Bundaberg now stands. Being an excellent timber tree, it was used greedily, and the only extensive stands of the tree now left are in the Bunya Mountains National Park. Surprisingly, the species also occurs naturally in the Mt Molloy district of north Queensland, more than 1000 km from its southern representatives. Being a very handsome tree, the bunya has also been planted in parks and public gardens, although it is rather too large for a normal home garden, and the sharp-pointed leaves make an uncomfortable litter.

The trees are tall and regular with a strong main stem and have a characteristic domed crown easily recognizable from a distance. As the tree grows, there is a tendency for older branches to be shed; these are replaced by new branches, the process giving to the tree a 'double-crown' effect which is most distinct when seen in silhouette. Leaves are short broad daggers which vary in length from about 1–3 cm depending on whether they are produced early or late in the growing season, so that on a branchlet there is an undulating alternation of large and small leaves. Branchlets, rather than single leaves, are shed.

Bunyas are similar to other pines in that they produce cones rather than flowers. The female cones are large, up to 30 cm long and 20 cm broad, and are glossy dark green. Each of the scales bears a single large egg-shaped seed of approximately 15 gm; the kernel is enclosed in a whitish or light brown woody seed coat. Cones are borne on the topmost branches; in a good year there may be as many as twenty on a single tree.

Although some cones are produced each year in the period January–March, there is a heavy crop at three-yearly intervals. When this occurred, the Aborigines would hold a big feast which was attended by tribes from a radius of 300 km or more. Message sticks were sent out by the local inhabitants. There is a record of a tribe coming from the Barcoo River to the Bunya Mountains for the feast. During the time of the feast there was a truce in inter-tribal fighting and all shared in the plenty. The last of these feasts was held about a century ago.

The cones were knocked off the trees; if they had been left to fall and then gathered up later a high proportion of the seeds would have been lost to bandicoots and other animals. To reach the cones, toe-holds more than a metre apart were cut in the bark and the climber used a vine passed around the tree to assist him as he climbed and cut the notches. When the notches had been cut, there was no need of a vine and a man could climb the 20 metres or more up the trunk to the lowest of the branches. These toe-holds are still to be seen in the trunks of trees in the Bunya Mountains, and are most impressive to a white generation whose usual idea of climbing is walking up a single flight of stairs.

Bunya nuts were worth the trouble of collecting. The Aborigines ate them raw or roasted, or ground them to use as a flour. We have tried them in several ways, and find them best boiled for about twenty minutes in the shell, then opened and eaten hot. Roasting is good too; some caution is needed because nuts, roasted on the coals, have a habit of exploding suddenly and scattering their contents far and wide. The kernel is starchy and delicious, something of the texture of a waxy boiled potato, with a slightly resinous flavour. Many white people have the erroneous idea that the embryo, the long yellowish structure in the middle of the seed, is poisonous and carefully remove it, but this is quite unnecessary.

Another treatment used by the Aborigines has little appeal today. Seeds were, in some cases, buried in the mud near water-holes for a month or two, then unearthed for eating. They may have germinated or become mouldy by then, and are said to have smelt offensive to white noses, but were highly regarded by the Aborigines.

Distribution: Qld

PLATE 3

1 Cotton-tree *p. 108*
2 Silky oak *p. 182*
3 Sea purslane *p. 128*
4 Native lasiandra *p. 40*
5 Candle-nut *p. 78*
6 Black bean *p. 83*

Avicennia marina var. *australasica* GREY MANGROVE

The opposite leaves, felted on the lower surface, and the distinctive, cobbler's-peg roots, about pencil thickness, rising erect from the mud, make this most widely distributed of the Australian mangroves an easily recognizable tree. Small yellow flowers are followed by flattened, green velvety fruits about 3 cm broad, each containing a single seed, most of which consists of two green, fleshy, folded cotyledons or seed-leaves. These seeds formed an important part of the diet of some coastal Aborigines in the north.

Seeds were steamed for a couple of hours on hot stones covered with bark and soil, and were then washed or soaked before eating. We have boiled them for twenty minutes in three changes of water, and find they have an agreeable flavour reminiscent of avocado or olive, but spoilt by a bitterness which becomes more apparent as more are eaten.
Distribution: All mainland States

Brachychiton populneum KURRAJONG

As the fruits mature they blacken, become hard and leathery, and split along one side to reveal numerous seeds more or less fused together by their outer seed-coats which bear numerous fine irritating hairs. The outer seed-coat is left behind, attached to the fruit wall, when the seed falls. Seeds can be scraped out of the fruit with a stick, and any outer seed-coats still adhering winnowed away by rubbing between two boards. The cleaned seeds are then eaten raw or roasted. Other species of *Brachychiton* can be used in the same way. (See also pp. 138, 173.)
Distribution: Qld, N.S.W., N.T.

Bruguiera gymnorhiza RED MANGROVE, LARGE-FRUITED ORANGE MANGROVE

Mangroves are a small group of trees and shrubs, drawn from various families, which occupy intertidal sand and mud on mainly tropical and subtropical shores. Most species have characteristics that make them fairly easily recognizable. *Bruguiera gymnorhiza* has distinctive flowers with up to thirteen narrow, rigid, reddish calyx-lobes which give the flower a bell-shaped form. These are common among drift on the beach.

PLATE 4
1 Sow thistle *p. 129*
2 Pigface *p. 70*
3 New Zealand spinach *p. 131*
4 Black nightshade *p. 74*
5 Pigweed *pp. 99, 127*
6 Grey saltbush *p. 105*
7 Samphire *p. 128*
8 Stinging nettle *p. 133*
9 Native rosella *p. 107*

As in several other mangroves, the seed germinates while the fruit is still attached to the parent tree, the first root pushing out as a green, cigar-shaped structure 10–12 cm long.

These 'cigars' were an item of food for the Aborigines, and at least as late as 1933 were being used by the tribes of Princess Charlotte Bay in northern Queensland. There are numerous tannin-containing cells in these roots, and it was probably the presence of this unpleasant-tasting substance that necessitated prolonged treatment before the material was fit to eat. The roots were first baked for about an hour by placing them among stones which had been heated in a fire, and covering them with bark from a paperbark tea-tree and a layer of sand. After pounding and the removal of skins, the pulped mash was washed several times in either fresh or salt water, the fine material being allowed to settle each time before the water was poured off. The last two washings were in fresh water. The starchy mush remaining was rid of excess water by squeezing in a dilly bag or by pouring into a hole in the sand to allow the water to drain away. Dinner was then served.
Distribution: Qld, N.S.W.

Cassia brewsteri LEICHHARDT BEAN

A genus which produces the senna pods of medicine would seem to hold little promise of producing food plants, but Ludwig Leichhardt, following his practice of trying anything at least once, seems to have had no hesitation in adding *Cassia brewsteri* to the menu, with perhaps predictable results: 'Yesterday we met with a new leguminous shrub. It belongs to the section Cassia, and has a long pinnate leaf, the leaflets an inch long, and half an inch broad. Its pods were about a foot long, half an inch broad; and every seed was surrounded by a fleshy spongy tissue, which, when dry, gave to the pod a slightly articulate appearance. The seeds, when young, had an agreeable taste, and the tissue, when dry, was pleasantly acidulous, and was eaten by some of my companions without any ill effect, whilst others, with myself, were severely purged.'

Children often eat the dark, sweet pulp surrounding the seeds of the introduced *C. fistula* (golden shower), and seem undeterred by its reputation as a mild purgative.
Distribution: Qld

Castanospermum australe MORETON BAY CHESTNUT, BLACK BEAN

A handsome tree of rainforests and creek banks which has entered into cultivation as an ornamental is the Moreton Bay chestnut. It is equally well known as the source of a valuable cabinet timber.

If the bark is cut, or if one of the glossy, pinnate leaves is broken off, a distinct odour of cucumber can usually be detected, and this provides a guide to the plant's identity in the absence of flowers or fruits. Flowers are borne in short clusters on old wood, yellow at first then orange-red, and they provide a rich source of nectar for parrots. The stout beans, up to 20 cm long, are marked with a few swellings which indicate the position of the seeds inside. Splitting the bean with a sharp blow reveals the seeds seated in a white pith. These half-pods, marked into compartments, have made fine toy boats for many children.

The large, starchy seed with its shiny brown coat is rather like the true chestnut in appearance, and was used by the Aborigines after preparation which seemed to vary in different districts. One treatment involved soaking in water for about ten days, pounding and baking.

It has been claimed that Europeans have 'subsisted on it exclusively for two days, that no other unpleasant effect was the result than a slight pain in the bowels, and that only when it was eaten raw.' We find this surprising. We once soaked thin slices of seed for two days in running water then boiled them in three changes of water over about three-quarters of an hour, in the mistaken belief that this modern treatment would be the equivalent of the Aboriginal preparation; three of the slices, resembling a nutty potato in flavour, produced intense griping which lasted several hours. A second attempt involved putting the seeds through a blender, washing in running water for fourteen days, and baking. The final product was harmless, but almost wholly without flavour. Distribution: Qld, N.S.W.

Cycas media

Cycas is one of the plants known as 'living fossils' because the living representatives are just a small remnant of a group which was very widespread in earlier geological ages. Mature trees have a distinct trunk covered in an armour of old leaf bases, and bear leathery, pinnate, 'feather-palm' leaves whose leaflets have a distinct midrib. Despite the palm-like appearance, *Cycas* is not a flowering plant, but produces a modified cone; this is just a crown of short, overlapping, seed-bearing leaves each with up to four large seeds borne along each side; as these mature they bend downwards making way for a new crown of foliage leaves.

Cycas shares Macrozamia's reputation as a poison plant. White men were poisoned by it very early in Australia's history. During the enforced stay of Captain Cook's *Endeavour* at Endeavour River in north Queensland, Joseph Banks wrote in his journal: 'By the hulls of these [*Cycas* seeds] which we found plentifully near the Indian fires we were assurd that these people eat them, and some of our gentlemen tried to do the same, but were deterrd from a second experiment by a hearty fit of vomiting and purging which was the consequence of the first. The hogs however who were still shorter of provision than we were eat them heartily and we concluded their constitutions stronger than ours, till after about a week they were all taken extreemly ill of indigestions; two died and the rest were savd with dificulty.'

However, as Banks had suspected, the Aborigines had a method of preparing the seeds which destroyed their poisonous quality. After some of his party had been poisoned by eating the seeds on the expedition to Port Essington in 1844–5, Leichhardt noted the details of preparation practised by the Aborigines: 'I also observed that seeds of Cycas were cut into very thin slices, about the size of a shilling, and these were spread out carefully on the ground to dry, after which, (as I saw in another camp a few days later) it seemed that the dry slices are put for several days in water, and, after a good soaking, are closely tied up in tea-tree bark to undergo a peculiar process of fermentation.' This treatment was probably followed by baking. According to other accounts the seeds were roasted first, then pounded into flour and left in a dilly bag in running water for twenty-four hours before being eaten. In some parts of northern Australia the seeds seem to have been one of the most important of the native vegetable foods.

Although *C. media* grows naturally only north of approximately the Tropic of Capricorn, it is often seen in gardens considerably further south.

The leaves of *Cycas* are produced in a flush, and the leaflets are fern-like in being coiled in the young stage. Such young leaves of the Asian *C. circinalis* have been cooked and eaten as a vegetable but there seems no record of the Australian species being treated in this way. (See also p. 105.)
Distribution: Qld, N.T.

Cordia subcordata SEA TRUMPET

Beautiful, orange, trumpet-shaped flowers with crinkled petals are borne in clusters opposite the leaves and justify the common name of this small seashore tree of the tropics. The fruit, rounded but shortly tapered at the apex, is enclosed in the persistent calyx and reaches 2–3 cm in diameter. Its small seeds are edible but not readily extracted from their rather bony coating.
Distribution: Qld, N.T.

Elaeocarpus bancroftii JOHNSTONE RIVER ALMOND, EBONY HEART

This tree of tropical rainforests is closely related to the blue quandong (see p. 30). However, the clustered bell-shaped flowers have petals with lobed rather than fringed margins, and the rounded or slightly egg-shaped fruits are green rather than blue. In this species it is the kernel of the hard stone which has been used as a food by both Aborigines and white men. The flavour has been variously described as ‘delicate as a filbert’, ‘inferior to that of the commercial almond’, and ‘comparable to that of a coconut’, but writers are agreed that the smooth pitted shell of the nut is very thick and hard.
Distribution: Qld

Endiandra pubens

In many rainforest trees, fruits are seldom seen attached to the branches in the dense canopy perhaps 20–30 m above, and when found on the rainforest floor, divorced from their foliage, are sometimes difficult to identify. However, the fruit of *E. pubens* is distinctive, looking almost like a small rosy apple. The single large seed was said to be a favourite with the Aborigines of Bellenden Ker. It was roasted, pounded and steeped in running water before use.
Distribution: Qld, N.S.W.

Endiandra palmerstonii QUEENSLAND WALNUT

Closely related to the previous species, this inhabitant of northern Queensland rainforests is well known as the source of an excellent cabinet wood. It is one of the largest trees of Queensland, growing to about 45 m. The red fruits with longitudinal ridges contain seeds which were eaten by the Aborigines after being roasted, pounded and steeped in running water. Distribution: Qld

Eucalyptus largiflorens BLACK BOX

Eucalyptus, the largest genus in Australia, with over 500 species, provides little in the way of food for man. However, in the Boulia district and possibly elsewhere, *E. largiflorens* provided an important source of food for the Aborigines when grass seeds were scarce. Fruiting branches were pulled down and left in the sun for a day to induce the capsules to open. The small seeds were brushed into water and soaked for a couple of hours with several changes of water to remove unpleasant flavours. After drying, the seed was ground on a grinding stone and eaten raw.
Distribution: Qld, N.S.W., Vic., S.A.

Eucalyptus camaldulensis RIVER RED GUM

The most widely distributed of all eucalypts, river red gums occur almost throughout the mainland of Australia, except for the wet coastal fringe and the southern parts of South Australia and Western Australia. It is the characteristic tree of the watercourses of inland Australia although not restricted to them, and is also well known overseas, having been successfully grown in semi-arid Mediterranean areas such as Egypt and Israel.

Seeds of this species are reported to have been eaten by the Aborigines, although it is not known how they were prepared.
Distribution: All mainland States.

Hibiscus meraukensis

Hibiscus has a dry fruit splitting into five valves and thus releasing the usually hairy seeds. Those of *H. meraukensis* are reported to be edible but what treatment, if any, they require is not recorded. Possibly the seeds of other species also are edible. (See also p. 107.)
Distribution: Qld, N.T.

Hicksbeachia pinnatifolia

Large, deeply pinnatifid leaves up to 60 cm long, and bright red fruits 2–3 cm broad make this rainforest inhabitant a striking plant. The seed, encased in a bony shell, is edible but the quality is inferior to that of its relative, the Queensland nut.
Distribution: Qld, N.S.W.

Lepidozamia peroffskyana (*Macrozamia denisonii*) BURRAWANG

Although superficially very similar to *Macrozamia* (see pp. 89, 108), this handsome cycad with a trunk up to 7 m high differs in the absence of a distinct stalk to the cones, and in the absence of the long erect spines on the female cone. In the popular press, enormous ages have sometimes been attributed to specimens of this species but it seems unlikely that any exceed five hundred years.

The female cones are exceptionally large structures, up to 80 cm long, and at maturity are a handsome sight when the cone scales begin to separate and reveal the bright orange-red seeds. These were reportedly eaten by the Aborigines, probably being treated in the same way as *Macrozamia*, a genus in which it has been included under the name *M. denisonii.*
Distribution: Qld, N.S.W.

Lepidozamia hopei (*Macrozamia hopei*)

L. hopei is the northern counterpart of *L. peroffskyana*, and is found in some of the lighter rainforests and moister eucalypt forests of northern Queensland. It has the distinction of being the tallest of all cycads, occasional specimens reaching a height of 18 m. The large seeds of this species also were eaten by the Aborigines after treatment.
Distribution: Qld

MACADAMIA Queensland Nut, Bauple Nut, Macadamia Nut

Regarded by some as the best nut in the world, the Queensland nut is now grown far more extensively in Hawaii than it is in its homeland. It is the only endemic Australian plant grown commercially as a food plant.

The leathery fruit-wall splits at maturity to reveal the shiny brown seed with its extremely hard bony shell. Nuts should not be cracked until some weeks after this has happened. Kernels removed while the outer coat is still green are likely to cling tenaciously to the shell, and will be of poor flavour. If the bony coat has split naturally the kernels should not be eaten, as on germination they may be poisonous. Conventional nutcrackers make little impression on the robust shells, but a specially designed cracker has been marketed on a very limited scale; its use avoids the damage to the kernel which generally results when a hammer is used.

Although the nuts are excellent raw, they are greatly improved by baking or by deep-frying. Baking should be done in a fairly slow oven until the nuts are a light brown; care should be taken as they burn easily, but they need a long time to cook through. Chopped roasted Queensland nuts make a delicious topping for a sundae; as a dessert, ice-cream topped with stewed native raspberries, whipped cream and chopped macadamia nuts is very hard to beat. The nuts, baked and chopped in two or three pieces, are superior to almonds for use in a Christmas cake, and in fact may be substituted for other types of nut in most recipes.

For many years, botanical names of the two cultivated species of *Macadamia* were misapplied, leading to considerable confusion.

Macadamia integrifolia QUEENSLAND NUT, BAUPLE NUT, MACADAMIA NUT

This is probably the more common species in cultivation. Leaves are usually in whorls of three, and have a leaf stalk often about 1 cm long. On fully mature parts of the plant leaves are without marginal teeth, although those on young or heavily-shaded parts are commonly toothed. Leaf apices are more or less rounded.

The shiny seeds are smooth, round, and up to 3 cm in diameter. Trees vary considerably in the size of the fruits they produce and in the thickness of the nut's shell. Over the last few years some work has been done in Australia on selecting particularly desirable forms and marketing grafted specimens.

This species was once well known in the rainforests of the Mt Bauple area, and for this reason was commonly called Bauple nut, a name sometimes corrupted to bopple or popple nut.
Distribution: Qld

Macadamia tetraphylla QUEENSLAND NUT, MACADAMIA NUT

This species is readily distinguished from *M. integrifolia* on leaf characters. The leaves are mostly in whorls of four, and have a very short stalk not exceeding 5 mm in length. Leaf margins are always toothed, and the leaf apex is more or less pointed. The hard shells are somewhat pointed with a roughened surface.
Distribution: Qld, N.S.W.

Macadamia whelanii

This species from northern Queensland rainforests has a general similarity to the Queensland nut, but has leaves with no marginal teeth. Its kernel is poisonous and extremely bitter in the fresh state, but was eaten by the Aborigines after soaking and baking.
Distribution: Qld

Macadamia praealta BALL NUT

This rainforest tree has round fruits, up to 5 cm across, containing one or two 'nuts' with shells rather thinner than those of its close relative, the Queensland nut. Unfortunately we have not tasted the kernels, but they are known to have been popular with the Aborigines.
Distribution: Qld, N.S.W.

Macrozamia BURRAWANG, ZAMIA

Macrozamia is a member of a small group of plants, the cycads, which, in an earlier age, formed a much more prominent part of the vegetation. Today's representatives are only a remnant of this once great group and, for that reason, are sometimes called living fossils.

The stem of *Macrozamia*, which may be either a short trunk or wholly underground and almost tuberous, is topped by a crown of pinnate, leathery, palm-like leaves, the leaflets without a distinct midrib. From near the centre of the crown arise the cones, either male or female. Each female cone bears crowded, spirally arranged short stalks with their ends upturned as overlapping sharp spikes giving the whole a vaguely pineapple-like appearance. Each short stalk bears two large orange-red seeds, which are largely hidden until maturity when the cone starts to break up.

Cycads have a bad reputation as poison plants, causing 'rickets' or 'wobbles' in stock eating the foliage. In some areas, therefore, the plants have largely been exterminated by property owners.

The French explorer La Pérouse arrived in New South Wales shortly after Captain Arthur Philip had reached there with the First Fleet; Philip recorded that the *Macrozamia* seeds 'when eaten by some of the French seamen, occasioned violent retchings'. Later, some of the members of Grey's expedition in Western Australia in 1837–39 sampled unprepared seeds and 'were seized with violent fits of vomiting, accompanied by vertigo and other distressing symptoms'.

However, the seeds contain large quantities of starch, and, as in so many other cases, the Aborigines devised methods of eliminating the harmful properties from this valuable source of food. There are fourteen species of *Macrozamia* in Australia, and it is likely that they used all or most of them. Methods of preparation seem to have varied from place to place. In Queensland they baked the seeds for half an hour in the ashes, removed the stony shell, cut the kernel in two and soaked them in water for 6–8 days. James Backhouse reported in 1843 that, in the Lake Macquarie district, the seeds were roasted and pounded, then left in water for two or three weeks.

Some time after the poisoning of some of his expedition by unprepared seeds, Grey observed the method of preparation used by the Aborigines. According to his account, and rather surprisingly, it was the fleshy outer layer of the seed rather than the starchy kernel which was used. He described the preparation as follows: 'The native women collect the nuts in the month of March, and having placed them in some shallow pool of water, they leave them to soak for several days. . . . they dig, in a dry sandy place, holes. . . . line them with rushes and fill them up with the nuts over which they sprinkle a little sand and then cover the holes nicely over with the tops of the grass-tree. In about a fortnight the pulp which encases the nut becomes quite dry, and it is then fit to eat; . . . The natives eat this pulp both raw and roasted; in the latter state it tastes quite as well as a chestnut. The process which these nuts undergo in the hands of the natives has no effect upon the kernel, which still acts both as an emetic and cathartic.'

In the early days of settlement in Australia some pioneers

crushed the seeds thoroughly, and washed out the starch in water where it eventually settled on the bottom and could be collected and dried for use. (See also p. 108.)
Distribution: Qld, N.S.W., W.A., N.T.

Myristica insipida QUEENSLAND NUTMEG

Nutmeg fruits have an outer layer a little like the flesh of a dry apricot. In Malaysia, this is candied to produce a pleasant but strongly aromatic sweet. At maturity, this fleshy coat splits to reveal the hard brown seed, the nutmeg of commerce, surrounded by red strands which are ground to give the condiment mace. A native Queensland species, *M. insipida*, has been listed as edible. However, we have not tried it, and are uncertain as to whether or not all parts are edible as they are in the commercial nutmeg.
Distribution: Qld

Pittosporum phillyreoides WEEPING PITTOSPORUM, BITTER BUSH, NATIVE WILLOW

This is an attractive small tree, with graceful pendulous branchlets, found mainly in the drier parts of Australia. As in the other species of *Pittosporum*, the yellow capsules open widely in two valves to reveal the sticky, reddish seeds. Although these seeds are said to be very bitter the Aborigines of the interior are reported to have pounded them to make flour.

It was possibly this species to which Ludwig Leichhardt referred as follows: '. . . and the emu here feeds on the fruit of the little Severn tree, which is so excessively bitter, as to impart its quality to the meat, and even to the gizzard and the very marrow.'
Distribution: All mainland States

Podocarpus amarus BLACK PINE

Like *P. elatus* (p. 51) in general appearance, this species from northern Queensland's rainforests has larger red seeds and no fleshy stalk. Inside the shell is a kernel about the size of a marble. The Aborigines ate the seed after roasting, rubbing between stones and mixing with a little water. We have eaten them after baking for twenty minutes, and found them inoffensive but with little flavour.
Distribution: Qld

Rhizophora SPIDER-MANGROVE

Rhizophora is one of the most distinctive of the mangroves with its arching, 'flying buttress' roots. The seed germinates within the fruit while it is still attached to the tree, and the first root or radicle grows out as a robust, cylindrical structure which reaches a length of 30 cm or more before falling from the tree. These radicles are known to have been used as emergency food in America, and are regarded as edible in the Solomon Islands. However, they contain numerous tannin cells and would be extremely astringent unless they were put through some preparation process similar to that used for the radicles of the related *Bruguiera.*

Dried leaves of an American species are reported to make 'a most agreeable tea.'

Distribution: Qld, N.S.W., N.T.

Santalum acuminatum QUANDONG, SWEET QUANDONG
(*Fusanus acuminatus*)

This small inland tree is best known for its edible fruits, but within the pitted stone is an oily, edible seed; this is said to contain so much oil that it will burn like a candle nut. An interesting observation of a Mr W. Paterson concerning the seed of the quandong is quoted by the anthropologist Helms in referring to the Kimberley Aborigines: 'The natives of this district eat a certain kind of fruit that ripens about Christmas, swallowing the stone it contains with it, and repeatedly resorting to the same spot, deposit their voidings, generally close to their camping-place. When returning after some time to the locality they pick the stones from out of the excrement, and after cracking them eat the kernel.' However, Helms himself noted that the quandong stones he frequently found near waterholes had been voided by emus and suggested that the stones opened by the Aborigines might be from this source. When the fleshy layer is so easily removed from the stone it would certainly be surprising if the stones were swallowed in quantity. (See also p. 57.)

Distribution: All mainland States

Sterculia quadrifida PEANUT-TREE

Although the flowers of the peanut-tree, which is found mainly in rainforests, are fairly insignificant, the fruits are particularly

handsome. They are woody-leathery structures, 5–8 cm long, and are borne singly or in groups of up to five. At maturity they split down one side and open widely to reveal a beautiful, orange-red inner surface with a row of up to five satin-black seeds, about the size of a peanut seed, along each margin. These nutty seeds are good to eat either raw or cooked. The fibre from the bark was used by the Aborigines for making nets and fishing lines.
Distribution: Qld, N.S.W., N.T.

Terminalia catappa INDIAN ALMOND, SEA ALMOND

Terminalias are tropical trees. There are two characters which are useful in their recognition. One is the tendency, at least in young specimens, for the lateral branches to be arranged in horizontal tiers. Another is the presence of a wing or ridge down each side of the elliptical or lemon-shaped fruit which, in many cases, is slightly flattened.

The Indian almond has relatively large fruits up to 6 cm long. Surrounding the central stone is a corky fibrous layer which acts as a cushion and makes it difficult to crack the shell and extract the kernel which is a slender, white, coiled structure. However, it is worth while going to some trouble as the kernel is of excellent flavour, rather like an almond.

There are several other species in Queensland and the Northern Territory and it is likely that all have edible kernels, although in some cases they are too small to be worth the effort of extraction.

In a few species the layer around the stone is more fleshy, and ripe fruits readily release a purple juice if damaged. There are reports that the fleshy layer in some, such as *T. platyphylla* and *T. seriocarpa*, is edible but the only fruits of this type we have been able to taste have been most unpalatable. Distribution: Qld

Xylomelum pyriforme WOODEN PEAR

Leaves on this coastal shrub vary considerably in form, those on immature parts having prickly, coarsely toothed margins, while those on adult branches are entire. Hardly any fruit could look less edible than its exceptionally woody 'pear' which reaches a length of up to 9 cm. However, this eventually splits to release two winged seeds which are reported to be edible.
Distribution: Qld, N.S.W.

CLIMBERS AND SCRAMBLERS

Canavalia maritima (*C. rosea*) MACKENZIE BEAN, FIRE BEAN

This purple-flowered native bean is a common sprawling creeper on coastal sand dunes, but occurs also in inland areas. The Aborigines ate the seeds after baking, and we have eaten young pods after thorough cooking. Both pods and seeds have a reputation for being poisonous in the raw state. (See also p. 176.)
Distribution: Qld, N.S.W., N.T.

Entada phaseoloides MATCHBOX-BEAN

Many who have never seen the parent vine will have seen the seeds of this tropical climber washed up on beaches a thousand miles or more away from the nearest plant. The robust stems are said to reach a length of 150 m or more. Its enormous beans, up to a metre or more long and 10 cm broad, contain large, flattened, dark brown seeds up to 5 cm across.

The seeds are poisonous and have been used as a fish poison after crushing. Nevertheless they are a good source of starch and were used also for food by the Aborigines, although reports suggest that they may not have been a popular item. The seeds were first roasted or baked, then pounded and left in a dilly bag in running water for about twelve hours before being used.
Distribution: Qld

Malaisia scandens BURNEY VINE

Although this scrambling creeper of rainforests and other moist areas is not particularly distinctive in appearance, it can usually be recognised by the presence of numerous, very small, hard hairs on the stem. These hairs are not visible to the naked eye but if one brushes against one of the long, almost leafless young branches likely to be found across one's path, a burn-like graze is likely to result. The fruits, which are usually clustered together, are small, orange nuts with the base seated in greenish cups and resembling minute acorns. The seed within the thin shell is edible either raw or cooked.
Distribution: Qld, N.S.W., N.T.

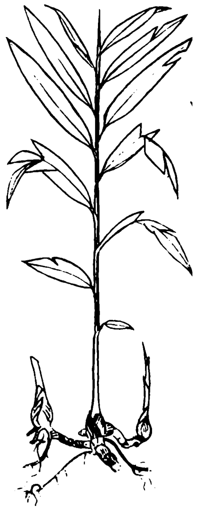
Mucuna gigantea **VELVET-BEAN**

This twiner of rainforests and moister eucalypt forests bears distinctive green flowers in a cluster on a weak, pendulous stalk. The fruits are flat, brown pods which have a pair of wings along each edge, and are covered with stiff, irritating hairs. These hairs fall away at maturity, but usually enough remain to cause some irritation if the pods are handled. The round seeds were eaten by the Aborigines after preparation.

These were among the numerous native plants tried by Leichhardt on his expedition to Port Essington. He wrote: 'I gathered the large vine-bean, with green blossoms, which had thick pods containing from one to five seeds. Its hard covering, by roasting, became very brittle; and I pounded the cotyledons, and boiled them for several hours. This softened them, and made a sort of porridge, which, at all events, was very satisfying. Judging by the appearance of the large stones which were frequently found, in the camps of the natives, still covered with the mealy particles of some seed which had been pounded upon them, it would seem that the natives used the same bean; but I could not ascertain how they were able to soften them. It did not make good coffee; and, when boiled in an iron pot, the water became very dark.'
Distribution: Qld, N.S.W., N.T.

HERBS

Alpinia caerulea **NATIVE GINGER**



The erect canes, with the large, glossy leaves borne alternately in one plane, bear a terminal flowering stalk of small white flowers which are followed by round, blue fruits about 1·5 cm broad, each crowned by the shrivelled remains of the petals. When ripe, the thin shell cracks off readily as three boat-shaped valves exposing the rounded mass of neatly packed, angular, brown seeds each surrounded by a scanty but pleasantly acid pulp.

It has been reported that in some areas the path taken by the Aborigines could be detected by the trail of spat-out ginger seeds that they left behind.

Sampling the seeds rather than the underground stems avoids

both the labour of digging and the resulting damage to this handsome plant. (See also p. 145.)
Distribution: Qld, N.S.W.

Ammannia multiflora JERRY-JERRY

A plant which the white man today would hardly suspect as an Aboriginal source of food is the one known to the tribe of the Cloncurry area as jerry-jerry. This is a small annual herb with minute flowers and slender leaves dilated and heart-shaped at the base. The small, red seeds from the dry fruits were the parts sought by the Aborigines and their preparation was described as follows: 'The whole plant is gathered and ground with the feet on the ground, to separate the woody parts; it is then winnowed, and ground up with water on flat stones, and baked as cake.' The recipe does not state whether or not shoes may be worn.
Distribution: All mainland States

Amomum dallachyi A NATIVE GINGER

A tropical species with the same general appearance as *Alpinia*, this plant bears its flowers on a short spike from the underground stem rather than at the end of the leafy shoot. The rounded fruit contains numerous seeds surrounded by a pulpy layer which was eaten by the Aborigines and is said to have a flavour resembling that of passion-fruit. Distribution: Qld

Enhalus acoroides A SEAGRASS

Enhalus is one of the seagrasses, marine flowering plants sometimes confused with seaweeds. It forms dense patches on intertidal flats, often in depressions from which the water never disappears. The ribbon-like leaves, about 1·5 cm wide, reach a metre or more in length and often stream out near the surface of the water. From other seagrasses it is easily distinguished by the long, black bristles which clothe the stem at the surface of the sand or mud.

The egg-shaped fruit, 5–7 cm long, is covered with bristles and is borne on a long irregularly coiled stalk. In northern Queensland the Aborigines are reported to have roasted and eaten the fruit, although it was probably only the seeds they used. In parts of southeast Asia the seeds are eaten raw as well as cooked.
Distribution: Qld

*Helianthus annuus** **SUNFLOWER**

Everyone is aware that sunflower seeds are a popular food for the larger parrots, and many people these days are conscious that they are also a good article of human diet, being rich in polyunsaturated oils as well as starch. The seeds can be eaten whole after hulling, or ground into a meal for baking into bread and cakes.

Sunflowers have always been popular as a hardy garden plant, and have come increasingly into cultivation for their seed in recent years in Australia. They flourish in the warmer parts of the country and are often found naturalized along roadsides. The large golden flower-heads all turned in the direction of the sun could not be mistaken for anything else. (See also pp. 162, 178.)
Distribution: Qld, N.S.W., S.A.

Hornstedtia scottiana (*Elettaria scottiana*) **NATIVE CARDAMON**

A rainforest species similar in appearance to *Alpinia caerulea*, this tropical plant has canes which reach 4 m in height and have a sharply swollen, almost bulb-like base. The flowering part is a short, cone-like structure a few centimetres high at the base of the plant; its red flowers appear one to three at a time beyond the overlapping red bracts. The fruits, hidden by the bracts, contain numerous white seeds which can be eaten raw and have a pleasant, gingery flavour. Seeds of a related Asian species provide the important spice cardamon.
Distribution: Qld

Linum marginale **NATIVE FLAX**

This herbaceous plant with a perennial rootstock, widespread in grassland and open forest country, belongs to the same genus as the plant from which flax and linseed oil are obtained. It is a slender, erect plant up to 60 cm tall, bearing delicate flowers of an intense blue. In commercial flax the seed-coat swells and becomes mucilaginous on wetting; the seeds of the native species are rather smaller, but have the same characteristics; they were eaten by the Aborigines.
Distribution: All States

Nelumbo nucifera (*Nelumbium speciosum*) LOTUS, SACRED LOTUS

Throughout much of tropical Asia, where it is commonly regarded as sacred, this plant is a frequent inhabitant of pools and lagoons. It is distinguished from most other water-lilies by the fact that its leaves, occasionally nearly a metre across, stand well out of the water. The broadly top-shaped fruit, which matures after the petals fall, contains individual nuts, roughly peanut-sized or a little larger, in individual cavities on the upper surface. Finally these nuts become loose and rattle freely in their cavities.

The seeds were used as food by the Aborigines, as they still are in southeast Asia, where they are eaten raw, roasted or boiled. Boiled, they have a mealy texture without any distinctive flavour. (See also pp. 125, 179.)
Distribution: Qld, N.T.

Nymphaea gigantea GIANT WATER-LILY

As the fruits of the water-lily develop after pollination, the four green calyx-lobes close and the stalk bends so that the fruit is carried below the water. Finally the calyx-lobes open again and drop off, and the fleshy wall of the rounded fruit disintegrates, releasing large numbers of small seeds which float for several hours before sinking to the bottom of the pond.

The fruits, collected before they split, were an important food of the Aborigines in the tropical and sub-tropical parts of Australia. The whole fruit was roasted, although only the seeds were eaten. In some cases the baked seeds were ground and washed to remove the brown seed coats from the starchy contents.

We have tried both boiling and baking the fruits, but the partitions are bitter and it is difficult to remove all the softened pieces from the seeds. The best way of treating this food seems to be to remove the seeds from the fruit before cooking. If the fruit is cut across, the small seeds can be easily squeezed from the numerous, wedge-shaped compartments, to look like a little heap of caviare. In the raw state they have little taste, but if lightly fried for about five minutes, the flavour of the crisp, gritty mass is excellent.

The blue, almost scentless blooms may reach a diameter of 30 cm, and are among the most beautiful of our native flowers. They occur in quiet pools and streams from Northern Territory to

northern New South Wales; there are less common purple, pink or white colour variants of *Nymphaea gigantea*.
Distribution: Qld, N.S.W., N.T.

*Nymphaea capensis** BLUE WATER-LILY

In southern Queensland and northern New South Wales the most commonly seen water-lily is not a native, but the widely naturalized *N. capensis* from South Africa. Its blue flowers are smaller than those of *N. gigantea*, have more distinctly pointed petals, and are highly perfumed. The flowers of this species too show variation of colour, in some cases having a purple tinge. Blue water-lilies may be used as *N. gigantea*.
Distribution: Qld, N.S.W.

Portulaca oleracea PIGWEED, PURSLANE

Pigweed is one of those species which occur almost world-wide. It is a prostrate plant growing in a wide variety of habitats from coastal areas to drier inland regions. We have seen it growing on the shores of a Barrier Reef island, one plant doing very nicely rooted in a weathered baler shell cast up at about high tide level; yet it flourishes also on sand ridges and river banks in inland Australia, and it was a prized food of the Cooper's Creek Aborigines. Pigweed is a very common garden weed in summer and autumn.

The plants are very succulent with thick stems and pairs of opposite, ovate, fleshy leaves up to about 2 cm in length. Stems sprawl along the ground, and a single plant may cover perhaps 1,000 sq cm. These prostrate stems do not produce roots and the whole plant may be easily pulled out. Small yellow flowers are produced in summer, and these are followed by capsules containing numerous, minute, kidney-shaped, black seeds.

It was the seeds which were so highly regarded as food by the Aborigines. They have been described by Dr Joseph Bancroft, an eminent natural scientist and medical man of the nineteenth century, as 'perhaps, the most valuable of all the specimens of native food under examination'. Individual seeds are extremely small, but are produced in such large quantity that it is possible to collect an adequate amount. Baron von Mueller reported that 'a native can gather many pounds weight of the seeds in a day'.

To collect the seeds, the entire plants are rooted up, the roots removed to clear the sand or dirt, and the plants placed upside down in a heap on a sheet of bark, a kangaroo skin, or a large sheet of clean paper, depending on one's kitchen training or ethnic background. The capsular fruits have neat lids which drop off as the plants dry, and the seeds are shed in a couple of days. We found that a patch of pigweed about a square metre in size produced a heaped tablespoon of the seeds, which look like gunpowder or black mineral sand. The seeds are then ground, preferably between flat stones (we used a pestle and mortar, which was not entirely satisfactory) and the meal is used to make cakes or bread. Seeds are oily, and considered to be highly nutritious. The flavour has been compared with that of linseed. (See also p. 127.)
Distribution: All mainland States

Seseli harveyanum SLENDER SESELI

Caraway, dill, fennel, aniseed and celery are all closely related herbs whose small dried fruits are widely used for the aromatic flavours they add. Probably a number of allied native plants could be used similarly if we took the time to become accustomed to them. One which has been used is the slender seseli, a cool-climate perennial plant with pinnate leaves and whitish flowers of the 'dill' type. The fruits were used as caraway seed by settlers in the Snowy River area and the plant was popularly known as 'anise plant' because of its aniseed scent.
Distribution: N.S.W., Vic.

GRASSES AND SEDGES

Grasses provide a large proportion of the world's starch foods. In Australia, several native grasses, of no commercial importance as crop foods in the modern world, are known to have been harvested by the Aborigines. Probably others, for which no record of use remains, were eaten also. Seeds of all native grasses can be regarded as quite safe to eat, although most of them are much smaller than those of commercial cereals.

Where sedges have entered into man's diet, it has usually been the underground fleshy parts which have been used. However, seeds of at least one species were used by the Aborigines.

Astrebla pectinata MITCHELL GRASS

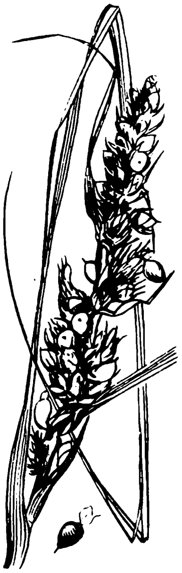
This pasture grass of the western plains, now so prized by pastoralists, at one time provided an important part of the diet of the Aborigines. Not only was it available in large quantities, but it had relatively large seeds which separated readily from the chaff.
Distribution: Qld, N.S.W., N.T., S.A.

*Coix lachryma-jobi** JOB'S TEARS

The seeds of this grass are enclosed in a bony, glossy grey coat giving them the appearance of beads about 5 mm broad. In Asia they have been used extensively in necklaces and ornaments. However, there are some varieties with softer shells which have been cultivated for food.

In Australia, plants are grown sometimes as garden curiosities, and are occasionally found as escapees from cultivation.
Distribution: Qld

Gahnia aspera SAW-SEDGE



Several of the more uncomfortable sedges are species of *Gahnia.* They have long, grass-like leaves with very sharp, finely saw-edged margins responsible for the common name. There is a short, creeping rhizome with a tall flowering stem to more than 2 m tall in some species. The inflorescence is black, either loosely branched and drooping or erect and spike-like, with the shiny nuts, which may be red, black or pale grey, hanging by short threads.

Nuts of *G. aspera*, a widespread species of sandy coastal country, are orange-red or brown-red when ripe, and are very shiny and smooth. Aborigines pounded them to produce a flour. This may well have required considerable effort, as our electric blender had no effect on them other than to remove the thin orange-red coat. (See also p. 122.)
Distribution: Qld, N.S.W., N.T.

Oryza sativa var. *fatua* WILD RICE

One of the most important of the native grasses harvested by the Aborigines was a variety of the species which supplies the rice of commerce. This wild rice grows extensively after the wet season over the swampy plains surrounding the Gulf of Carpentaria. As

the swamps dried out the grain was harvested. Chaff was removed by rubbing in wooden troughs; according to one account bundles of the grass were kept under water for a considerable time before being winnowed; according to another, the straw was burnt and the seeds removed from the ash. The grains, rather smaller than commercial rice, were then ground between stones, mixed with water, and baked.
Distribution: Qld, N.T.

Panicum decompositum AUSTRALIAN MILLET, NATIVE MILLET, UMBRELLA GRASS

This common grass of the interior has a branching inflorescence which breaks off at maturity and is widely distributed by wind. It was one of the important native food plants, the seeds being ground between stones, made into a paste and baked in the ashes.

Major Sir Thomas Mitchell in his *Journal of an Expedition into the Interior of Tropical Australia* made an interesting entry concerning this grass, and disclosed his uneasiness at being partly responsible for the eventual displacement of the black man. This entry, made as he journeyed along the Narran River, reads as follows: 'The Panicum laevinode of Dr. Lindley seemed to predominate, a grass whereof the seed ("Cooly") is made by the natives into a kind of paste or bread. Dry heaps of this grass that had been pulled expressly for the purpose of gathering the seed, lay along our path for many miles. I counted nine miles along the river, in which we rode through this grass only, reaching to our saddle-girths, and the same grass seemed to grow back from the river, at least as far as the eye could reach through a very open forest. I had never seen such rich natural pasturage in any other part of New South Wales. Still it was what supplied the bread of the natives; and these children of the soil were doing everything in their power to assist me, whose wheel tracks would probably bring the white man's cattle into it.'
Distribution: All mainland States

Sporobolus

Although grains of this grass are very small they have the great advantage, from the point of view of the food-gatherer, of falling freely from their husk. Thus the time-consuming labour of pounding and winnowing is avoided. The two inland species, *S. actinocladus* and *S. caroli* (yakka grass, fairy grass), are among those known to have been used by the Aborigines, who ground the grains between stones and baked a type of damper in the ashes.

Distribution: *S. actinocladus* – Qld, N.T.
S. caroli – all mainland States

OTHER SEEDS

The following species are reported to have edible seeds. In some cases, no information is available on the preparation, if any, that was used before eating.

Acacia oswaldii UMBRELLA WATTLE: Raw; all mainland States
Acacia retinoides WIRILDA: Vic., Tas., S.A.
Adenanthera abrosperma: Roasted; Qld, N.T.
Adenanthera pavonina: Roasted; Qld, N.T.
Aristida sp.: N.T.
Canarium australasicum: Raw; Qld, N.T.
Canarium muelleri ELEMI TREE: Qld
Clianthus formosus STURT'S DESERT PEA: Qld, N.S.W., S.A., W.A., N.T.
Coelospermum reticulatum: Qld, N.T.
Cordia dichotoma: Qld
Crotalaria cunninghamii: Qld, N.T.
Cynanchum pedunculatum: Raw or cooked; Qld, N.T.
Dactyloctenium aegypticum: Qld, N.T.
*Eleusine indica** CROWSFOOT GRASS: Qld, N.S.W.
Grevillea striata: Qld, N.S.W., S.A., N.T.
Helicia diversifolia: Raw; Qld
Heterodendrum oleifolium: All mainland States
Ipomoea muelleri: Qld, N.T.
Leersia hexandra SWAMP RICE GRASS: Qld, N.S.W.
Nypa fruticans NYPA: Young seeds; Qld.
*Setaria italica** FOXTAIL: Qld, N.S.W., Vic., W.A.
Tapeinocheilos queenslandiae BACKSCRATCHER: Qld
Urena lobata PINK-FLOWERED BURR: Raw; Qld, N.T.

4 Leaves and Shoots

A LARGE NUMBER of native plants and weeds can be used as cooked green vegetables or in salads. Those which are eaten cooked are prepared in the same way as spinach and in many cases taste just as good, or just as bad, as that vegetable. A general rule to remember is to use only young leaves and shoots; the older ones tend to be bitter and fibrous. Because of this they are better eaten in the spring or early summer, when they are growing vigorously, rather than later in the season; we would not enjoy eating a cultivated lettuce months after it reached prime condition, and the same applies to the wild vegetables.

As is the case with the more conventional green vegetables, the wild ones respond to 'dressing up' in the serving; they are generally improved by addition of butter, pepper or other spices and herbs, often a dash of lemon juice. Wild greens make an interesting addition to soups, and this is perhaps a safe introduction to those who may be too suspicious to tackle a full helping of *purée* of pigweed, or stinging nettles *au gratin.*

Salad greens may be introduced in small quantities, e.g. in potato salad. Not many of the plants available are really delicious substitutes for conventional salad vegetables, but they can be used to add variety to the dish, or can be picked to nibble while out walking, when they will be found quite enjoyable, or at least interesting.

TREES AND SHRUBS

Acalypha

The reds, browns, pinks, yellows and greens of the variegated leaves of *Acalypha wilkesiana* are a very familiar sight in tropical and subtropical gardens, where it is one of the commonest and hardiest of shrubs. In southeast Asia where it is also cultivated the

cooked leaves have been used as an emergency food and it is claimed that other species there could be used similarly. Of the Australian natives, which are all non-variegated, we have tried only *A. nemorum* but, although this caused us no harm, it had nothing special to recommend it.
Distribution: *A. nemorum* – Qld

Atriplex cinerea GREY SALTBUSH

We tend to think of saltbush as inhabiting the dry inland parts of Australia, and this is true of most species. A few species, however, occur near the coast, and perhaps the best known of these is the grey or coast saltbush, *A. cinerea.* It occurs in salt marshes and along the shore, often close to high-tide level, and grows into a large bush up to about 1·5 m tall. The leaves are flat, grey-green with a silvery sheen, and elongate-rhomboidal in shape. Male and female flowers are borne on separate plants and are not showy, but are conspicuous because they are borne in such dense clusters.

The grey saltbush may be used as a cooked green vegetable. It is not recommended for use uncooked because some species, when raw, have an emetic action.

Some other saltbushes, including inland species, may be used as spinach substitutes. Leichhardt recorded a high opinion of these in the journal of his 1844 overland expedition, so it would be worth while trying some, sparingly at first.
Distribution: All States, along the coast

Brachychiton rupestre BOTTLE TREE,
NARROW-LEAVED BOTTLE TREE

The young shoots of the bottle tree are said to be agreeable and refreshing. It is probable that the shoots of other species of *Brachychiton* also could be eaten, at least after cooking. (See also pp. 138, 169, 185.)
Distribution: Qld

Cycas media

Young leaves of *Cycas* are partly coiled like those of a fern, and in this stage the leaves of the Asian *Cycas circinalis* are cooked and eaten as a vegetable. The crown of leaves in the African cycad *Encephalartos* also is eaten; the generic name means head-bread.

We know of no instance of the use of young fronds of *Cycas* or of other cycads in Australia, but it is likely they would be edible after thorough cooking. However, as cycads have a bad reputation as poisonous plants any experimentation should be carried out very cautiously.

The trunks of *Cycas* and of other cycads contain reserves of starch, and, in Asia, the pith of *Cycas* stems has been ground up so that the starch could be washed from it. In Australia, the Aborigines seem to have been unaware of it as a source of food. (See also p. 83.)
Distribution: Qld, N.T.

Enchylaena tomentosa BARRIER SALTBUSH, RUBY SALTBUSH

This inland saltbush can be used as a green vegetable; during Captain Charles Sturt's expedition of 1844–46 into the interior it was found valuable as an anti-scorbutic. (See also p. 30.)
Distribution: All mainland States

Erythrina variegata var. *orientalis* (*E. indica*) CORAL TREE

The coral tree is a widespread small tree of the southeast Asian area. Although its natural occurrence in Australia is limited to northern Queensland and the Northern Territory, it is commonly seen much further south as a cultivated ornamental. Its brilliant scarlet flowers, borne mainly when the prickly branches are leafless, make it one of the spectacular flowering trees of the tropics and sub-tropics. There seems to be no record of its use by Australian Aborigines, but the young leaves are reported to be eaten in curries in Ceylon, and steamed in Malaysia.

This is one of the trees popular with the nectar-seeking parrots which sometimes behave in an intoxicated way after feeding. The birds' inability to say 'British constitution' after spending some time among the blossoms has been blamed on their ingestion of an alkaloid obtained by nipping the calyx of the flower. In view of this it might be wise to leave *Erythrina* out of the curry!
Distribution: Qld, N.T.

Ficus FIG

As a general rule, the young shoots may be eaten as a boiled green vegetable; the leaves of many species become leathery soon after they unfold but the terminal cone of young, folded leaves is tender enough.

It is probably wiser to avoid the sandpaper figs, which have silicified hairs on the leaves. (See also p. 34.)
Distribution: Qld, N.S.W., Vic., N.T.

HIBISCUS

The genus *Hibiscus* is well known through the widespread cultivation of the introduced *H. rosa-sinensis* whose large, showy flower is often pictured on tourist brochures behind the ear of some dusky maiden. However, the genus is also well represented in eastern Australia, from Victoria and South Australia to Queensland and the Northern Territory, by native species, only two in Victoria but over twenty in Queensland. Most have smaller flowers than the commonly cultivated forms but many are still handsome plants in bloom.

Aborigines are reported to have eaten the leaves and flower buds of some species, either raw or cooked, and any *Hibiscus* is almost certainly safe to eat. The flavour is pleasantly acid, and when cooked is reminiscent of the stewed fruits of rosella which belongs to the same family.

Some species, such as the sprawling *H. diversifolius*, become very harsh with the development of prickles on stem and leaf stalks, but we have found even this good if only the young leaf blades are used. (See also pp. 86, 139.)

Hibiscus heterophyllus NATIVE ROSELLA, NATIVE SORREL

A tall shrub of moist eucalypt forests, some of the leaves on this plant have three narrow, diverging lobes while others are quite undivided. Small prickles usually develop on stems, leaf-stalks and even the undersurface of leaf-blades, making the plant harsh to the touch. Its large flowers are mainly white, with a pink blush on the underside of the petals. Young shoots and buds eaten with or without cooking have the usual acid flavour of *Hibiscus* which is responsible for the alternative common name, native sorrel, occasionally applied to the species.
Distribution: Qld, N.S.W., N.T.

Hibiscus tiliaceus COTTON-TREE

This is a tree species bearing pale yellow flowers with a dark red throat. A native of the coastal regions in the tropics and subtropics, it is fairly common not far from the beach, and has been planted as a street tree in a number of resorts. The young leaves are edible, as are the flowers. Distribution: Qld, N.S.W., N.T.

*Leucaena leucocephala** (*L. glauca*)

Probably a species of American origin, this graceful shrub or small tree is now fairly widespread in the tropics. It closely resembles a wattle of the group with bipinnate leaves, but the cream flowers have only ten stamens and its relatively broad, strap-shaped pods are 'rattly' at maturity. The leaves have an onion-like odour on crushing. In Australia the plant has been grown as an ornamental and, on an experimental basis, as a fodder crop; strays from cultivation are reasonably common.

The young leaves, pods and seeds have been cooked as a vegetable, but in view of the fact that *Leucaena* is known to be poisonous to horses, causing loss of hair from manes and tails, the vegetable is not one to be recommended except in an emergency. (See also p. 175.)
Distribution: Qld, N.S.W.

Macrozamia BURRAWANG, ZAMIA

Like *Cycas*, the stems of *Macrozamia* contain considerable quantities of starch, and before the Second World War this starch was exploited commercially in Australia, the larger grains going into laundry starch, and the smaller grains being used to produce paste. This starch is, of course, edible, but, like that from *Cycas* stems, seems not to have been used by the Aborigines. (See also p. 89.)
Distribution: Qld, N.S.W., N.T.

Musa banksii NATIVE BANANA

Fruits are not the only parts of the banana tree that are edible. The large conical bud at the apex of the flowering stalk can be boiled and eaten, although several changes of water may be necessary to reduce the bitter flavour. If the purplish bracts are too tough they can be discarded and the flowers only used. Young, white parts of shoots at the base of the plant also can be boiled and eaten.

The trunk of a banana tree is made up mainly of overlapping leaf bases but in the centre is a core or stem which terminates in the flowering bud. This stem is fleshy-fibrous and is edible after boiling, as is the stem of the cultivated banana. Although by no means a high-class vegetable it is harmless and without unpleasant flavour. (See also p. 44.)
Distribution: Qld

_Opuntia_* PRICKLY PEAR

Fruits of the prickly pear are well worth eating. The spiny stems look less inviting but can nevertheless be used for food. Young and tender joints of the stem only are taken; the prickles and bristles are removed, preferably by singeing first, then slicing off. The part of the stem which remains is then boiled and used as an inoffensive green vegetable. It is highly mucilaginous which is a disadvantage, but there is nothing unpleasant about its taste; it has been used in times of shortage in its native America, particularly by the Indians.

On receiving a gift of 'Edible Cactus' prepared in Japan, we were interested to find that it appeared to be candied stem of *Opuntia* or a close relative. We therefore tried preparing candied prickly pear pads, following a recipe for using pineapple or cherries, and found it was quite successful. The syrup used became very sticky from all the mucilage, but the final product was pleasantly chewy green strips of mild flavour. (See also p. 45.)
Distribution: Qld, N.S.W., Vic., S.A.

Palms

Many of the palms provide an excellent vegetable. The bud at the top of the tree is obtained by removing the older leaves until the 'cabbage' is left; this palm heart may be boiled or roasted in the ashes. Unfortunately this removal of the apical bud kills the tree, so we cannot recommend its use, but include the information for interest. The coconut palm is one of those highly recommended for its cabbage, and as a living tree of this species is of such economic value, the thought of its destruction inspires the name 'Millionaire's Salad' for its apical bud.

It is the larger palms, with consequently larger apical buds, that have drawn much interest and comment on their use. The cabbage palm, *Livistona australis*, in particular has been used by the Aborigines for food, either baked in the ashes or raw. Leichhardt reported from his overland expedition in 1844 that 'several of my companions suffered by eating too much of the cabbage-palm'; they had eaten it without preparation. The leaves of this palm were formerly used for hat-making, the result being the cabbage-tree hats well known in the last century.

The piccabeen palms (*Archontophoenix* spp), the northern fan (*Normanbya normanbyi*) which is a handsome palm with bipinnate palms (*Livistona benthamii* and *Licuala muelleri*), and the black palm leaves, also have been used for their cabbage.

The walking stick palm, *Linospadix monostachyus*, is a much smaller pinnate-leaved palm, usually 2–3 m tall. The heart is correspondingly small, but Joseph Banks remarked in his *Endeavour* Journal, 'these too yielded cabbage if not so sweet as the other sort yet the quantity made ample amends.'

Palms are usually thought of as typical of tropical vegetation, and certainly they are well developed in tropical rainforests. Some, however, occur far outside of this habitat. *Livistona* is particularly wide-ranging, being found in well-watered gorges and gullies as far apart as Palm Gorge in Central Australia, the Carnarvon Gorge in Queensland, and the Orbost district in Victoria.

Distribution: Predominantly in tropical rainforests and coastal regions, but some in coastal gullies of N.S.W. and Victoria.

Pandanus SCREW-PINE

If the crown of keeled, sword-like leaves of the screw-pine is trimmed down, the soft white bases of the young leaves can be removed and eaten either raw or cooked. (See also p. 48.)

Distribution: Qld, N.S.W., N.T.

Pemphis acidula

In the tropical parts of Australia this sprawling, often gnarled shrub is found commonly growing in accumulated sand and grit between granite boulders just above high water mark. Its general appearance is remarkably similar to that of a *Leptospermum* but its

six petals immediately distinguish it, *Leptospermum* having only five. It has been claimed that the leaves are edible raw. We have nibbled the green leaves and found them slightly acid, as the botanical name might suggest, but could not recommend them as other than emergency food.
Distribution: Qld, N.T.

Pisonia grandis PISONIA

Pisonia is the dominant tree of many of the uninhabited coral cays off the Queensland coast, and in Australia is restricted to them except for some small islands in the Gulf of Carpentaria. The trees are large and very soft-wooded, with pale grey trunks and brittle branches. The leaves are a fresh, light yellow-green; flowers are inconspicuous, but the sticky fruits which follow them are notorious for the death toll they cause amongst seabirds nesting in the *Pisonia* branches.

Young leaves of *Pisonia* are edible, and make an acceptable cooked green vegetable. In Malaysia the trees are cultivated for this purpose.
Distribution: Qld

Rhagodia parabolica FRAGRANT SALTBUSH

This inland shrub has fleshy, mealy-grey, more or less rhomboidal leaves with a strong salty taste. The explorer, Sir Thomas Mitchell, investigated its salt content on his inland journey to tropical Australia, and found it to contain one-third of its weight of salt. After removing most of the salt with brief boiling in a couple of changes of water he found that a third boiling for an hour produced 'a tender and palatable vegetable, somewhat resembling spinach'.

The fruits of an unidentified species of *Rhagodia* were reported to have been eaten by the Aborigines.
Distribution: All mainland States

Thespesia populnea PACIFIC ROSEWOOD, INDIAN TULIP TREE

In the tropics, this tree with heart-shaped leaves is a common member of the shore community. It shows considerable resemblance to *Hibiscus tiliaceus* but lacks a hairy undersurface to the leaf, and its yellow flowers with maroon centre do not have the style

apex clearly divided as in *Hibiscus*. Young leaves, buds and flowers can be eaten raw or cooked.
Distribution: Qld, N.T.

Tournefortia argentea (*Messerschmidia argentea*) SILVER-LEAF

On coral cays and along tropical sandy shores this shrub is one of the most distinctive species, with its crooked branches and canopy of rigid leaves with silver-grey hairs often reaching down to the sand at high water mark. The young leaves are edible either raw or cooked.
Distribution: Qld, N.T.

Xanthorrhoea GRASSTREE, BLACKBOY

Among the plants which help to give the Australian bush its distinctive appearance is the strange group known in eastern Australia usually as grasstrees and in Western Australia as blackboys. In some species the stem remains underground while in others it develops a short trunk with a protecting armour of leaf-bases. There is a great crown of slender, arching leaves which droop as they age to form a grass skirt around the top of the trunk. Fires which sweep most grasstree country from time to time burn off the grass skirts and leave stark, blackened trunks which justify one of the common names.

With some effort leaves can be pulled from the crown, and a small amount of nourishment obtained by chewing the soft, white bases. The growing point at the apex of the stem provides better fare but seems small justification for destroying what we, at least, regard as a very handsome plant. (See also p. 184.)
Distribution: All mainland States

CLIMBERS AND SCRAMBLERS

Epipremnum pinnatum

This is a common climber of the north Queensland rainforests, the stems closely attached to the supporting tree-trunk by roots and in some cases reaching up to 10 m or more. The large, spectacular leaves up to 40 cm broad are deeply cut and recall those of the cultivated *Monstera deliciosa*. It has been reported that the stems

were used for food by the Aborigines, but no details have survived. The plant being a member of the Araceae, which includes many poisonous members, it is unlikely that the stems would be fit for human consumption without considerable preparation.
Distribution: Qld

Flagellaria indica SUPPLEJACK

A climbing plant of rainforests and their margins, supplejack is very distinctive in that it climbs by 'watch-spring' tendrils at the end of the leaves. The upward coiling found in this species is unusual.

Young leafy shoots of supplejack can be boiled for use as a green. They have no very distinctive flavour but are quite acceptable.
Distribution: Qld, N.S.W., N.T.

Geitonoplesium cymosum SCRAMBLING LILY

In the moister type of eucalypt forest and along many creek banks the scrambling lily is a common, slender twiner with wiry stems and alternate leaves with parallel veins. From the superficially similar *Eustrephus latifolius* it can be distinguished by the green tips to the flowers, and by its black rather than yellow fruits.

The tender, pale, young shoots, as they emerge from the ground, resemble very slender asparagus spears and have been recommended for use in the same way. However, in most areas it would be a long job finding enough suitable shoots for a meal.
Distribution: Qld, N.S.W., Vic.

Ipomoea aquatica KANGKONG

The leaves and young stems of this relative of sweet potato can be boiled and eaten as a vegetable. It is an aquatic plant, rooting in mud and with the long, trailing buoyant stems often growing out well beyond the bank into deeper water where it forms dense floating masses.

In Australia the plant is restricted to northern, sparsely populated areas and is little known as a vegetable. However, in south-east Asia it is widely cultivated and can be seen in many roadside pools. Houses fronting canals often have a front garden of *Ipomoea aquatica* stretching from the bank several yards out into the

waterway. Among the many local names used there for the plant the Chinese *kangkong* is one of the best known.
Distribution: Qld, N.T.

*Ipomoea batatas** SWEET POTATO

The sweet potato with its long, trailing stems is sometimes seen as an escapee from cultivation in tropical and subtropical areas. As well as the tubers for which the plant is cultivated, the young stems and leaves also are edible after boiling.
Distribution: Qld

HERBS AND GRASSES

*Acetosella angiocarpa** (*Rumex acetosella*) SHEEP SORREL

Sheep sorrel is not native to Australia, but has become naturalized and occurs widely as a weed, particularly on acid soils. It has distinctive leaves shaped like an arrow or spearhead and containing an acid juice. The male and female flowers are small and are carried on different plants.

The leaves are pleasant to nibble raw, with a refreshing sourness. Small amounts may be used as a flavouring for potato or rice salads; it is not wise to eat very large amounts at one time as the oxalic acid, which is the cause of the acidity, may be harmful if taken to excess.

Sheep sorrel leaves cook quickly and after a few minutes are ready for use; they mash easily to a puree, and if this is served with butter it makes a most acceptable green vegetable with rather more character than many of the others available.

Soup may be prepared from this plant in several ways. A simple method is to add the leaves which have been cooked slowly in water for about an hour to a pan of hot milk thickened with blended flour and flavoured with onion and butter; the soup should be strained before serving.

Those who eat *Acetosella* follow a long tradition. It was in use in the Iron Age as a food, as evidenced by the discovery of the Tollund Man. His remains, found in a peat bog in Denmark in 1950, were so well preserved that at first the police were inclined to investigate a murder; Professor Glob of Aarhus University

showed that the man had died 2,000 years previously; his last meal was preserved in his stomach, and consisted of a porridge of vegetables and seeds including barley, sheep sorrel and fat-hen.
Distribution: All States

Achyranthes aspera CHAFF-FLOWER

This herb, regarded as a weed in some areas, bears small greenish, chaffy flowers in long spikes. As the fruits mature, they gradually become directed downwards and may lie along the stem. Like those of its relative, the green amaranth, the young leaves can be boiled for use as a green vegetable.
Distribution: Qld, N.S.W., N.T.

*Amaranthus viridis** GREEN AMARANTH

The green amaranth is a common weed of roadsides and waste ground, except in Tasmania. Its ovate leaves, rather distinctly veined, and the characteristic grey-brown scaly inflorescence of small flowers, help to identify it. The young shoots may be used as a spinach substitute or in soups, but they are not recommended to be eaten raw. At least four other species of *Amaranthus* have been used in the same way, and probably all the Australian species could be eaten.
Distribution: All mainland States

*Amaranthus retroflexus** RED-ROOT AMARANTH

This amaranth is generally similar to the green amaranth; it may be distinguished from it by the rosy red root and by the dense, fine, soft hairs which are usually present on the plant.

Seeds of both these amaranths have been used to a considerable extent by the North American Indians; the seeds were ground into meal which was then used for porridge or baked in cakes.
Distribution: N.S.W., Vic., Tas., S.A., W.A.

Apium prostratum SEA CELERY

Like the cultivated celery, the sea celery has deeply dissected leaves, but differs in having a more or less prostrate stem without tall, robust fruiting branches. Plants occur both along the coast, particularly on sand dunes, and also in inland localities at the margins of swampy areas. It was eaten by Captain Cook's party

at Endeavour River, but makes a poor substitute for domestic celery.
Distribution: Qld, N.S.W., Vic., S.A., Tas.

Barbarea australis AUSTRAL WINTER-CRESS

This southern Australian species has a general resemblance to watercress, but occurs on wettish land rather than in streams. The flowers are yellow, and leaves are of two kinds, long pinnate ones forming a basal rosette and simple ones clasping the stem; the fruits are elongate, up to 5 cm long, with the seeds in one row in each valve.

Shoots can be used as a green salad and the plant is reputed to have similar anti-scorbutic properties to watercress.
Distribution: N.S.W., Vic., Tas.

*Beta vulgaris** WILD BEET

Wild beet is a weed native to Europe, North Africa and Asia. From it have been developed the cultivated beets – the red beetroot and the sugar beet which is of great commercial importance in Europe. The wild form has spread as a weed in cooler parts of Australia, particularly in coastal areas, and even the cultivated silver beet has become naturalized in parts of South Australia. Wild and cultivated beets are used in the same way as green vegetables, but the wild beet has not developed the thickened root familiar in beetroot.

The plant may be recognized by its general similarity to cultivated beet.
Distribution: Vic., S.A.

*Bidens pilosa** COBBLER'S PEGS

This common weed of the warmer parts of Australia is well known and unpopular because of its dry fruits, the cobbler's pegs or Spanish needles. These fruits have two barbed projections at the apex which are a very efficient means of seed dispersal – the pegs catch readily on clothing, and usually need to be removed one at a time; they play havoc with nylon stockings.

The plant is coarse and unappetising in appearance. The young shoots however may be used as a boiled vegetable. The water in which they are cooked turns tea-brown, and should be changed several times during the proceedings. Even after several changes of water, the resultant product has an aromatic flavour reminiscent of the Brazilian cherry. One of us found this quite pleasant, and the other thought it the reverse. A few leaves added to a stew should make an interesting variation. Distribution: Qld, N.S.W.

Calandrinia balonensis PARAKEELYA

This inland plant is related to pigweed, and is used in similar ways. It is branched, about 30 cm high, with thick, fleshy leaves 2–5 cm long, and large, purple flowers with very numerous stamens. The leaves have been used for food, and the numerous small seeds for making a type of bread.

The related *C. polyandra* is very similar in appearance and has been used as food by some Aboriginal tribes.
Distribution: *C. balonensis* – Qld, N.S.W., S.A.
C. polyandra – Qld, N.S.W., S.A., W.A., N.T.

*Cardamine hirsuta** COMMON BITTER-CRESS

One of the cresses, this is a small, white-flowered, annual herb. The pinnate, slightly hairy leaves are produced both on the erect stem and as a basal rosette; fruits are flattened and narrow, up to about 2·5 cm long.

Bitter-cress has been recommended as a potherb by several early botanical writers. An introduced plant, it occurs as a weed on cultivated ground, especially in moist, shaded places.
Distribution: N.S.W., Vic., S.A., Tas.

*Chenopodium album** FAT-HEN

Fat-hen is a very common weed in Europe and the cooler parts of Asia, and has spread from there to many parts of the world, including temperate Australia. It has been used as a spinach substitute for thousands of years and was apparently of major importance in Britain as a vegetable for centuries. The seeds also were used and have been found in the preserved remains of Tollund Man who lived in Denmark two thousand years ago.

The name *Chenopodium album* at present is used in Australia for a complex of species which have not yet been completely sorted out. Plants are dull green with a mealy layer whitening the flowers and leaves; the lower leaves are more or less rhomboidal and toothed, the narrow upper ones lack teeth. The flowers are small, and are grouped in dense mealy spikes both at the apex of the plant and in the leaf axils. Distribution: All States

*Chenopodium murale** SOWBANE

Another species of *Chenopodium*, this resembles fat-hen in general appearance but the leaves are greener, often shiny, lacking the mealy covering; the flower-spikes are shorter than the leaves so tend to be somewhat hidden rather than freely exposed as in the previous species.

We have not eaten sowbane, but it has been used in Victoria as a spinach substitute. The common name is due to its being believed by some to be injurious to sows. There are, however, no confirmed reports of its being poisonous.
Distribution: All States

*Cichorium intybus** CHICORY

A thistle-type plant with milky latex, chicory is distinctive in having very pretty blue flowers. The leaves arising at ground level are pinnately lobed or slightly toothed.

Leaves are used in the same way as those of dandelion, and have a similar bitter taste. Raw, we think they are like rather old lettuce, but tastes do vary! Cooking reduces the bitterness, and using several changes of water does so even more. In continental Europe the leaves are often blanched for use in salads.

Chicory is widespread and naturalized in Australia, particularly in the south.
Distribution: All States, but not in the far north.

Commelina cyanea WANDERING JEW, SCURVY WEED

A common weed of gardens in tropical and subtropical areas, wandering jew is found also on creek banks and in moist forests. The creeping stems, rooted at the nodes, have broad grass-like leaves; the three-petalled, bright blue flowers are handsome and conspicuous, but short-lived.

Young shoots of *Commelina* can be used as a cooked green vegetable. Boiled and served with butter and salt, they are acceptable but not distinguished. Distribution: Qld, N.S.W., N.T.

Commelina ensifolia SCURVY GRASS

Related to the previous species, this *Commelina* may be used in similar ways. A plant of the hot, dry interior, it has been used in times of need in western Queensland; its common name testifies to its value in such times.
Distribution: Qld, N.T.

Cymbidium canaliculatum

This orchid is an epiphyte of eucalypt forests, extending from the coast to well inland, and is the only orchid tolerating such dry conditions. It is found usually in the fork or hollow spout of a eucalypt, the roots sometimes growing down the hollow trunk for several metres. The short erect leafy shoots are much swollen to form the pseudobulbs crowded into a dense clump. Its rigid, dull greyish leaves distinguish it from other cymbidiums.

The pseudobulbs are packed with starch. They can be eaten either raw or cooked but they are mucilaginous and insipid. If the pseudobulb is grated or pounded the starch can be washed out and allowed to settle. It has been claimed that 'delicate children have been reared on this when accidents have cut off from them other supplies.' The plant was at one time known as native arrowroot but this term seems to have fallen into disuse.

The brown fruit which eventually splits to release enormous numbers of minute seeds can also be eaten raw.

In the Northern Territory, the sap from the pseudobulb was used in bark painting to fix the ochre applied to the bark.
Distribution: Qld, N.S.W., W.A., N.T.

Cymbidium madidum

This species is distinguishable from *C. canaliculatum* by its bright green leaves and its restriction to the wetter types of eucalypt forest and light rainforest. Its pseudobulbs can be treated as those of *C. canaliculatum*. According to one author, the Aborigines chewed them to combat dysentery.
Distribution: Qld, N.S.W.

Dendrobium speciosum KING ORCHID

Orchids of the large genus *Dendrobium* usually grow on the trunks and branches of trees and on the faces of cliffs. In fact the name is derived from the Greek *dendros* – a tree, and *bios* – life. The erect stem bearing terminal leaves is, in many cases, fleshy-fibrous. There are records of these fleshy stems or pseudobulbs of *D. speciosum* being eaten by the Aborigines, and other species also may have been used.

The king orchid is the largest of the dendrobiums, with pseudobulbs, commonly 50 cm or more long, occurring in clumps of fifty or more. It bears large sprays of white or cream flowers in spring.
Distribution: Qld, N.S.W.

Doryanthes excelsa GIANT LILY, FLAME LILY, GYMEA LILY

One of the striking plants of coastal New South Wales is the giant lily with its rosette of sword-like leaves about a metre long, and robust flowering stalk, up to 4 m high, bearing a cluster of large red flowers at the top. James Backhouse, the English Quaker who visited Australia, seems to be the only one who recorded the Aboriginal use of this plant. When he visited the Lake Macquarie district in 1836 he wrote in his journal: 'These [flowering] stems are roasted, and eaten by the Aborigines, who cut them for this purpose, when they are about a foot and a half high, and thicker than a man's arm. The Blacks also roast the roots, and make them into a sort of cake, which they eat cold.'
Distribution: N.S.W.

*Eichhornia crassipes** WATER HYACINTH

One of the worst weeds of tropical and subtropical fresh-water lakes and streams, the water hyacinth is also very attractive to look at. Plants are usually entirely floating, with a thick mass of dark roots in the water; the clump of erect glossy green leaves has rounded blades and swollen petioles (leaf-stalks); at the edges of ponds, or in places where the water level has dropped, they occur rooted in mud; in this situation the petioles are much elongated, particularly if growing in shady positions. The spikes of flowers are attractive, a delicate lavender colour with some blue and yellow on the uppermost petal. Water hyacinth grows fast and can quickly cover a pond, completely excluding light from the water beneath and so indirectly causing the death of the plant and animal life, including fish, beneath; one can understand why it is known as 'lilac devil' in the Congo.

Eichhornia should not be eaten raw as it causes itching. The young leaves, leaf-stalks and flower-spikes may be used as a boiled or steamed vegetable. We do not recommend this plant highly as it is fairly tasteless, and even young leaf-blades are inclined to be tough and stringy. The inflated petioles have been recommended deepfried, but on removal from the hot fat they collapse like a tube with a fast puncture; they are better if coated in batter before frying, but most of the flavour comes from the batter. The young flower-spikes are the most tender, although once again virtually flavourless.
Distribution: All mainland States

Elatostema reticulatum

Closely related to the stinging nettle, but fortunately lacking the stinging hairs, is *Elatostema*. It is a thick-stemmed herb very frequently found in masses along streams and watercourses in the rainforest, and may be recognized by the asymmetric leaves, each with a small lobe at the base on one side, arranged in one plane.

The leafy stems may be boiled as a spinach substitute and, in our opinion, taste better than spinach. The young stems in particular are succulent and tasty.
Distribution: Qld, N.S.W.

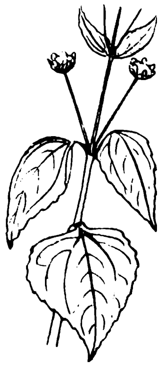
*Emilia sonchifolia** PURPLE EMILY

Emilia resembles a small thistle in its general appearance; the specific name *sonchifolia* indicates that its leaves look like those of the milk thistle. The plants are fairly insignificant, but may be recognized when in flower by the small, purple, thistle-type flower-heads, about a centimetre long.

The whole plant of purple emily, including flowers, may be eaten either cooked or uncooked. Distribution: Qld, N.S.W.

*Galinsoga parviflora** POTATO WEED, GALLANT SOLDIER

In spite of its common name, this small weed is of the large family Compositae to which *Bidens* and so many other weeds belong. It has rather soft, opposite leaves, and produces abundant small flower-heads which are yellow with a few marginal white florets.



The whole plant, including the flowers but excepting the roots, can be cooked as a green vegetable. If served with butter, the latter provides most of the flavour, so a pleasant dish is produced. As usual, young plants are more acceptable as older ones are inclined to be stringy. Distribution: All States

Gahnia SAW-SEDGE

The leaf-buds of some species of *Gahnia* (p. 101) have been recorded as being eaten by the Aborigines. They would certainly need to be used very young, as mature leaves are very tough and sharp-edged. Distribution: Qld, N.S.W., Tas., N.T.

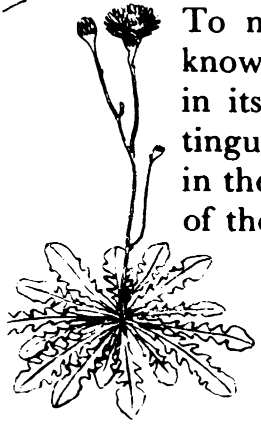
Hydrocotyle PENNYWORT

Species of *Hydrocotyle* have creeping stems and generally rounded leaves, some with broadly toothed margins, borne on long erect leaf-stalks. Many are plants of moist places such as creek banks and track margins in rainforests, but some tolerate full sunlight. In southeast Asia some species are eaten as green vegetables. We have tried *H. vulgaris* and *H. hirta* boiled. Both have a strong, carroty taste and we should not want to eat them in large quantities.
Distribution: Some species in all States

*Hypochoeris glabra** SMOOTH CAT'S-EAR

Closely related to the following species, the smooth cat's-ear is distinguished by its hairless leaves, and by the longer bracts surrounding the flower-heads. This weed also is an introduction from Europe, and like its relative is common in many parts of Australia. The young leaves may be used in the same way as those of *H. radicata*.
Distribution: All States

*Hypochoeris radicata** CAT'S-EAR, FLAT-WEED



To many people this common weed of lawns and pastures is known as dandelion, which it resembles in general appearance and in its bright yellow flower-heads. Botanically they may be distinguished by the presence of chaffy scales amongst the tiny florets in the head of *Hypochoeris*, and by the branched feathery structure of the hairs on the wind-borne fruits; in dandelion there are no chaffy scales, and the soft bristles of the fruits are simple, not feathery. A simple distinction is that cat's-ear usually has branched flower stems with several heads, while in dandelion heads are always borne singly. Both produce a white milky sap when stems, leaves or flowers are broken.

Leaves of cat's-ear may be used in the same way as those of dandelion and are less bitter. Although rather undistinguished in taste they may be found useful as they are usually available in large quantities along roadsides and in open grassed areas. Use young leaves only. Distribution: All States

Lactuca serriola PRICKLY LETTUCE, COMPASS PLANT

One of the yellow-flowered milky thistles, this species of *Lactuca* is related to, and possibly an ancestor of, the cultivated lettuce. In general appearance it is rather similar to the sow thistle but harsher and with the prickly leaves tending to be orientated in one plane, for which reason it is sometimes known as compass plant. The latin name *Lactuca* refers to the milky juice exuded when any part of the plant is broken or cut.

Young leafy stems and unopened flower-heads can be used raw in salads or cooked as a green. As with other plants of the dandelion type, the condition of the specimens used is of great importance – plants growing vigorously and in a fresh state will be found most acceptable, while stunted, old or wilted material is not worth the trouble of cooking.
Distribution: All States

*Lepidium hyssopifolium** PEPPERCRESS

A common weed around cultivation in warmer parts of Australia is the peppercress. From the other cresses it may be distinguished by its minute flowers with petals shorter than the sepals, and by its very short pods. It has been used raw as a cress, and also may be cooked; it is, however, a coarser and less succulent plant than the other cresses. In some related northern American species the pods, which are peppery in flavour, are used as a seasoning in soups and salads.

Peppercress is regarded as an undesirable weed in dairying districts because of its reputation for tainting milk.
Distribution: Qld, N.S.W.

Lomandra longifolia MAT-RUSH

Tussocks of this very widespread mat-rush occur in great abundance from Cape York Peninsula to Tasmania; it is frequently found along creek-banks, being very resistant to flooding, but also occurs on rocky hillsides, cliffs, and in open forest.

Individual clumps of *Lomandra* may be a metre or so in diameter, and along creek banks may occur densely enough to make an uncomfortable barrier to the walker. The discomfort arises partly from the thought of lurking snakes, and partly from the spiny inflorescences; the flowers are small and creamy, male and female flowers occurring separately in association with sharp spines. Long, tough and narrow leaves arise from an underground stem; they were used by the Aborigines for making dilly-bags.

Bases of these rush-like leaves are good to nibble. Leaves are pulled with some difficulty from the plant and the tender white base is chewed; their taste is like that of fresh green peas, and they are refreshing and enjoyable to eat. (See also p. 163.)
Distribution: Qld, N.S.W., Vic., S.A., Tas.

*Nasturtium officinale** WATERCRESS

An introduced plant, watercress has become naturalized in many parts of Australia. It grows in the running water at the margins of creeks, surviving quite well even if the water stops running. It may be washed out to a certain extent in floods but holds its position reasonably well because of the numerous roots produced along the more or less prostrate hollow stems. Plants are freely branched with compound leaves and clusters of small, white, four-petalled flowers; the flowers are followed by narrow pod-like fruits 1–2 cm long, on stalks of about the same length.

The leaves are used as salad vegetables and have a pleasant bite to them. For campers and hikers they make a welcome addition to bread and cheese. Watercress may also be used as a boiled green vegetable, but this is probably rather a waste of the fresh shoots, which are highly regarded as a source of vitamin C.

When picking cress, some thought should be given to the condition of the water in which it is growing. If it is polluted by animals, the cress should not be used because of possible contamination by liver-flukes. Distribution: All States

Nelumbo nucifera LOTUS, SACRED LOTUS
(*Nelumbium speciosum*)

Leaves of this large water-lily are borne well above the surface of the water. After stripping off the tough outer layer the lower parts of the leaf-stalks were eaten by the Aborigines. The creeping rootstock also has been eaten by the Aborigines and by people in Asia. (See also pp. 98, 179.)
Distribution: Qld, N.T.

Nymphaea WATER-LILY

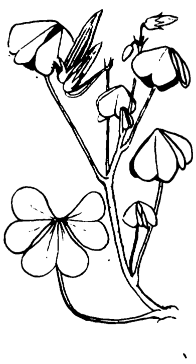
Almost every part of the giant water-lily, *Nymphaea gigantea*, has been used for food (p. 98). Even the leaf-, flower- and fruit-stalks can be used. The same uses apply to the common blue water-lily, *N. capensis*, which, although introduced, has become widely naturalized for so long that many people think of it as a native.

Stalks are eaten raw after the skin has been peeled off; it strips quite easily, rather like celery, and leaves a crisp, pale green stick which may be chewed in the same way as that cultivated vegetable. It has less flavour, although one unimpressed taster likened it to soap; the pleasure in eating it comes more from the texture than from the taste.
Distribution: *N. capensis** – Qld, N.S.W.
N. gigantea – Qld, N.S.W., N.T.

Oxalis corniculata YELLOW WOOD-SORREL

This delicate herb has creeping stems, and the leaves are smaller than those of *O. corymbosa*, without the succulent bases; they taste much more acid and are not used much.

The wood-sorrel, with its yellow, bell-shaped flowers up to about a centimetre across and its 'shamrock' leaves, is a very common weak sprawler in clearings and open forest, and occurs often as a weed in gardens.
Distribution: All States



*Oxalis corymbosa** PINK SHAMROCK

In Europe the species of *Oxalis* are commonly known as wood-sorrel. This name is used in Australia in some areas, but probably more general is the incorrectly used name of shamrock. The plants are familiar to most people with their characteristically heart-shaped three leaflets. In *O. corymbosa* the leaflets may be 2–3 cm across; the clusters of pink bell-shaped flowers are very attractive, although not to the home gardener who finds this a most troublesome weed.

This sorrel is not related to the sheep sorrel, but shares with it the sour taste due to the presence of oxalic acid which can be harmful in large amounts. The leaves are however pleasant to nibble, and people usually chew the leaf bases which are succulently sour and refreshing. In small quantities they may be used in salads. (See also p. 152.)
Distribution: Qld, N.S.W., Vic., S.A.

Phragmites australis (*P. communis*) COMMON REED

Dense reed beds are very common in swampy places, either along fresh or brackish creeks or on the margins of lakes. The reed is one of the tallest of the grasses, and may grow to 3 m high.

As well as the erect stems which bear the flowers in summer, the reed has a thick underground rhizome which was cooked by the North American Indians like potatoes, boiled or roasted. The only time we tried these, they were too woody to eat, but it may be worth while giving them a trial at different seasons.

The young shoots which the rhizome sends up, particularly in spring, are really delicious. They must be harvested young, preferably before green leaves have developed on them. Boiled in salted water, they bear a considerable resemblance to asparagus. As the reed occurs in such dense masses over large areas, it is not difficult to collect sufficient to be well worth eating.

Young leaves have been recommended as a cooked green, but we found them tough and flavourless.
Distribution: All States

Polygonum hydropiper WATER PEPPER, SMARTWEED

An attractive inhabitant of creek banks and swampy places is the water pepper with its slender, arching spike of small pink flowers. Like other polygonums it has a characteristic, membranous sheath surrounding the stem above the attachment of each leaf. This plant was one of several used by the Aborigines to catch fish; the plant was pounded, thrown into a pool, and the stupefied fish

floating to the surface were easily captured. However, the Aborigines are also reported to have eaten the stems after roasting and peeling. The only specimen we have tried was rather too old and woody to allow a fair assessment to be made. Touching lips or eyes after handling fresh, crushed material of this plant is likely to cause considerable irritation.
Distribution: Qld, N.S.W., Vic.

Portulaca oleracea PIGWEED, PURSLANE

The succulent stems and leaves of the pigweed (see p. 99) have long been used as a green vegetable in inland areas, particularly in earlier years when fresh greens were unavailable in many places. The leafy shoots are boiled as a substitute for spinach, or eaten raw. Uncooked, they taste quite like lettuce.

Some people find the leaves rather too slimy from the mucilage present, but the plants have been praised particularly by the early explorers. Leichhardt wrote with enthusiasm in 1844, 'We again enjoyed some fine messes of Portulaca'; Baron von Mueller, the great botanist of Victoria, was even more fulsome: 'We had almost daily occasion to praise the value of the Purslane, which not only occurred in every part of the country explored, but also principally in the neighbourhood of rivers, often in the greatest abundance. We found it in sandy and grassy localities so agreeably acidulous as to use it for food without any preparation, and I have reason to attribute the continuance of our health partly to the constant use of this valuable plant. The absence of other anti-scorbutic herbs in the north, and the facility with which it may be gathered, entitle it to particular notice.'

Portulaca is a cosmopolitan plant, occurring naturally in many parts of the world. It has been known as edible for centuries in Europe, and in Britain goes under the common name of Purslane. The sixteenth century herbalist John Gerarde spoke of its being 'much used in sallads with oile, salt and vinegar', and it was used also as a pickle.
Distribution: All mainland States

Rorippa islandica YELLOW MARSH-CRESS

This native cress shows much resemblance to *Nasturtium* in general appearance, but has small yellow flowers. The fruit is oblong, not more than 1 cm long, with numerous seeds arranged in two rows in each of the two valves. The leaves, though deeply lobed, are not completely divided into segments as are those of *Nasturtium*.

The yellow marsh-cress is recorded as being an 'excellent pot-herb when luxuriant and flaccid'. It is widespread in the temperate regions of eastern Australia, occurring, as its common name implies, on the borders of swamps and streams or in ditches.
Distribution: Qld, N.S.W., Vic., S.A., Tas.

Rumex brownii DOCK

One of the best known weeds occurring Australia wide is the coarse-looking dock; there are eight or so species of *Rumex* given this name. All have a flowering stem arising from a basal rosette of leaves, and on this stem the leaves have a 'wrap-around' sheathing base. The individual flowers are small and insignificant, and are grouped in a long cluster, the flowers being followed by small burr-like or winged fruits.

Dock leaves may be boiled for use as a green vegetable. All species are edible, although some are reported to be bitter. We have used *R. brownii* and found it acceptable although unexciting.

The species of *Rumex* are often found as weeds on waste ground, particularly in well-watered positions such as creek-banks and roadside drainage channels.
Distribution: All States

Salicornia quinqueflora SAMPHIRE, GLASSWORT,
(*S. australis*) CHICKEN-CLAWS

Related to the seablite, the samphire is often found in close association with it on salt flats high in the intertidal area. Plants are easy to recognize as they have jointed, leafless, succulent stems which are freely branched to give a low, shrubby form.

Young shoots may be eaten raw but are too salty for most tastes; boiled, they taste like too-salty spinach unless the water is changed during the cooking. They can also be used as a pickle in the same way as seablite, and this, to us, seems to be the best use for them.
Distribution: All States

Sesuvium portulacastrum SEA PURSLANE

Along tropical and subtropical shores over much of the world, a common species is this fleshy, prostrate plant with opposite, strap-shaped leaves on reddish stems, and small, star-like pink flowers. It was one of the plants eaten by Captain Cook's party while the *Endeavour* was being repaired at the mouth of the Endeavour River; Banks referred to it in his journal as the red-flowered purslane.

Sesuvium is edible raw or cooked, some authors recommending that it be cooked in more than one change of water to reduce the salty taste. We have cooked it in only one lot of water which reduced the salt content sufficiently in our specimen. Although the flavour at first seemed not unpleasant, within a minute or two some irritation of the back of the throat developed.
Distribution: Qld, N.S.W., N.T.

*Sonchus asper** PRICKLY SOW THISTLE

A close relative of *S. oleraceus*, *S. asper* has leaves which are thick, firm and shiny rather than soft and dull. The leaf margins are spiny or toothed. The species is regarded as edible, and may be used similarly to the better known milk thistle.

The prickly sow thistle is a common weed in southern parts of Australia.
Distribution: N.S.W., Vic., Tas., S.A., W.A.

*Sonchus oleraceus** MILK THISTLE, SOW THISTLE

This common soft thistle is known to most people, with its rather fleshy grey-green leaves, milky sap, and bright yellow flowers followed by heads of thistledown.

Young leaves and shoots make a pleasant green vegetable when cooked. They are not at all bitter, although inclined to be stringy if old stems and leaves are used. One young man to whom we fed some thought they were 'better than beans' although in his case this was not regarded as highly complimentary. The flavour is mild, and might well be improved by addition of chopped bacon or herbs.

The young leaves may also be used raw in salads or for nibbling; they are slightly bitter, but not too much so. Roots are reported to be edible, but we have found them woody and unacceptable as food. The sow thistle is a very common weed of cultivated ground and roadsides.
Distribution: All States

*Stellaria media** CHICKWEED

Chickweed is a common weed in gardens and other areas of disturbed ground where there is ample moisture. It is a rather weak, sprawling plant with opposite leaves about 1–2 cm long, freely branched. The nodes at which the leaves are attached tend to be swollen. Probably the flowers provide the easiest method of recognition; they are small, white and star-like, with each of the five petals so deeply divided as to look as though there are ten.

Young shoots of chickweed may be eaten raw or cooked. They are not of strong flavour, and have been described by one writer as 'one of the most deliciously tender of all wild vegetables', by another as 'having little taste'. We are inclined to agree with the latter description, but of course a dish of a mildly flavoured green such as this responds very favourably to addition of butter and lemon.

Distribution: All States

Suaeda australis (*S. maritima*) SEABLITE

Behind the beaches, and even more commonly to the landward side of mangrove swamps, we often find extensive salt flats. Vegetation of these salt flats is restricted in variety, so that a few species may be present in great abundance. One of these is the seablite, *Suaeda australis*, which sometimes covers considerable areas with its low shrubby growth, often about 15–20 cm in height, sometimes up to 60 cm. The branched stems bear densely-packed, succulent, cylindrical leaves 2–4 cm long; these leaves are typically pale green but frequently are flushed with red or purple, to make the whole area where they grow appear rose-red from a distance.

Tips of the stem with leaves can be eaten raw, when they are quite crisp and pleasant to munch. They are also good to use as a boiled green vegetable, and we find them rather like beans, although more salty; if the saltiness is objectionable, the water should be changed once or twice during boiling, but it is better not to boil the leaves too long as the crisp texture may be destroyed.

The young shoots have been used also as a pickle. To do this, first boil the shoots for a few minutes in water and then place them in spiced vinegar; a simple variant is to place them in the vinegar from a jar of pickled onions, which of course gives the shoots an added flavour. After a week or so the shoots are ready for use as a relish with meat or eaten alone; we find this well worth the very small trouble of preparation. Distribution: All States

*Taraxacum officinale** DANDELION

Dandelion is one of the few plants that almost anyone can recognize, or thinks he can. The flat, toothed leaves all arising at ground level, the brilliant yellow-gold flower-heads and the fluffy 'twelve-o'clocks' which follow them, are a familiar sight, usually unwelcome, in lawns and pastures.

Young dandelion leaves may be used either raw or cooked; they are rather bitter, to our taste unpleasantly so. Raw, the leaves are chopped and tossed with a dressing for use as a green salad. In Europe and America the leaves of plants in gardens are sometimes covered during growth to blanch them. In cooking, the leaves should be added to boiling water and cooked for a few minutes only. Some people prefer cooking the leaves before using them as a tossed salad. The plant has a reputation as a diuretic.

Dandelions have been used in England for centuries, but were less popular there than on the Continent. The famous seventeenth-century herbalist Nicholas Culpeper recommended the plant in these terms: 'You see here what Virtues this common Herb hath, and that's the reason the *French* and *Dutch* so often eat them in the Spring; and now if you look a little farther, you may see plainly, without a pair of Spectacles, that Foreign Physicians are not so Selfish as ours are, but more communicative of the Virtue of Plants to People.'

A native of Europe and North America, *T. officinale* has become naturalized in this country and occurs widely in the cooler parts of Australia. (See also pp. 154, 179.)
Distribution: All States, but not common in the north.

Tetragonia tetragonioides NEW ZEALAND SPINACH

A native not only of New Zealand, but also of Japan, South America and Australia, New Zealand spinach is a most useful edible plant. It is common in coastal districts, growing in sand often near the beach. Distinctive in appearance, the stems and triangular leaves are covered with glistening, liquid-filled, small pustules which give a somewhat clammy feel on handling. The flowers are yellowish-green and fairly inconspicuous. Stems of a well-grown plant are crisp and snap easily.

Young shoots are used as a green vegetable in the same way as spinach, which they much resemble in taste. This was among the first Australian plants used as food by white men, as shown by an extract from the *Endeavour* Journal of Sir Joseph Banks: ‘We dind to day upon the sting-ray and his tripe: the fish itself was not quite so good as a scate nor was it much inferior, the tripe every body thought excellent. We had with it a dish of the leaves of *tetragonia cornuta* [now *T. tetragonioides*] boild, which eat as well as spinage or very near it.’

Another writer records that Captain Cook had the New Zealand spinach served to his men every day, at breakfast and dinner. Banks introduced the plant into England in 1772, and it was grown in English gardens as New Zealand spinach or Botany Bay greens for many years. It would certainly be worth allowing to grow in Australian seaside gardens at least, as it requires very little attention, yet is a good source of ‘greens’.

Distribution: All States

Trigonella suavissima SWEET FENUGREEK, MENINDIE CLOVER

The pea family contains a large number of species whose foliage is important as animal fodder. One which has been used also for human consumption is *T. suavissima*. Sir Thomas Mitchell, in his account of three expeditions in eastern Australia, wrote: ‘The perfume of this herb, its freshness and flavour, induced me to try it as a vegetable, and we found it to be delicious, tender as spinach, and to preserve a very green colour when boiled’. We have not yet tried this species, but it sounds most tempting!

The plant is a low herb, with trifoliate leaves and clusters of pale yellow flowers sessile in the leaf axils. Although the word clover figures in one of its common names, some prefer to restrict this term to members of the related genus *Trifolium*.

Distribution: All mainland States, in inland areas with temperate climate.

Typha BULRUSH

One of the best known aquatic plants, the bulrush is usually recognized by its stiff, brown, rod-like flower spikes projecting above the long grass-like leaves. Plants grow vigorously, rooted in shallow ponds, and may extend over a considerable area along the margins of quiet lakes and waterways.

During spring and summer the new shoots, almost pure white, arise from the spongy underground stems. These can be cut while they are still growing horizontally or shortly after they have turned upwards. After boiling they make a pleasant vegetable, but only a small portion of the shoot is edible; a couple of inches behind the apex, fibres are too well developed to make eating worth while.

There are two native species and one introduced one, all more or less similar in general appearance. (See also p. 163.)
Distribution: Some species in all States

Urtica STINGING NETTLE

Stinging hairs on stems and leaves of these herbs give an infallible, if uncomfortable, guide to their identity. The hairs contain formic acid, which is also felt painfully in ant bites.

In spite of the stinging hairs, nettle tops are edible, and, in fact, are one of the best of the wild green vegetables. For obvious reasons, they are not eaten raw; they are boiled for a few minutes, thus removing the formic acid, and may then be used either as a green vegetable or as a base for soup. The shoots must of course be picked with some care, but by using secateurs or gloves it is possible to gather quite a few stalks without too many stings.

Young shoots and tips only are used. Older parts of the plant are bitter and fibrous, so much so that nettle fibre has been used in Scotland for making a linen-like cloth. You may remember the fairy story which tells of an unfortunate princess who had to weave seven nettle shirts to free her seven brothers from the wicked witch's spell.

There are two species occurring widely in Australia. *U. urens* is the introduced one, an annual seldom over 50 cm high. Its leaves are ovate or elliptical, up to 5 cm long, and its male and female flowers occur grouped together. The native species is *U. incisa*, a perennial, sometimes almost a scrambler in habit and reaching 1–2 m in height. Leaves up to 10 cm long are long-tapered, and the male and female flowers are borne in separate groups.

Distribution: *U. incisa* – Qld, N.S.W., Vic., Tas., S.A.
*U. urens** – All States

FERNS

Fronds of many ferns are edible in the young stages. They need to be picked while still in the 'fiddle-head' or 'crozier' stage, i.e. while the stalk is still curled at the apex, and before side branches of the leaf have unfolded. Fronds of some ferns become very bitter due to the presence of tannins if picked at a later stage; quite a number have too much tannin to be enjoyable eating at any stage.

Some tree ferns have been used as food, a single frond in the crozier stage being large enough for a meal. Other ferns should be tried with caution. We have found very young fronds of bracken and some other larger ferns quite acceptable, but had a nasty surprise on chewing croziers of the bat's wing fern, *Histiopteris incisa*, finding it highly unpleasant and pungent.

The croziers may be eaten raw, when they are crisp but often mucilaginous. They have been used as cooked green vegetables by country people in times of shortage, and were regarded in some areas as a substitute for asparagus Some species of ferns are found in all States.

Ceratopteris thalictroides SWAMP FERN

Plants are aquatic or semi-aquatic, occurring in ponds and lakes in tropical and subtropical regions. They grow rooted in the muddy bed of shallower parts, sometimes drying off each year as the water dries up, and germinating afresh in the following wet season. Fronds are up to about 30 cm high, soft and almost succulent in texture. They are rather carrot-like in general appearance, but may be recognized as ferns by the typical, uncurling fiddle-heads of the young fronds.

The species is widely spread throughout tropical countries and is regarded as an excellent food, all the leafy parts being used raw or cooked as a green. Unfortunately it is not very common, but worth trying if it is found.
Distribution: Qld

Cyathea TREE-FERN

The largest genus of tree-fern in Australia, *Cyathea* includes species found in rainforests and the moister eucalypt forests. As with

Dicksonia, the apex of the trunk contains a large amount of starch, and was used either raw or baked by the Aborigines. This use is, of course, not recommended now as it would kill the plant.
Distribution: Qld, N.S.W., Vic., Tas.

Dicksonia antarctica SOFT TREE-FERN

This tree-fern is widespread in the moister parts of eastern Australia, but is probably best known as the prominent species of many moist gullies in Victoria. Its trunk is considerably thicker than that of most other tree-ferns. The soft, pithy tissue near the top of the trunk contains considerable quantities of starch and was eaten either raw or cooked by the Aborigines. However, like the tissues of many ferns, it contains tannin and is said to be astringent.

Use of this tissue would destroy the tree, so we include the information for interest only.
Distribution: Qld, N.S.W., Vic., Tas.

OTHER LEAVES AND SHOOTS

The following species are reported in the literature to have edible shoots or leaves. In some cases no information is available as to the preparation, if any, required before eating.

Abelmoschus ficulneus (*Hibiscus ficulneus*): Qld, N.T.
Abelmoschus moschatus (*Hibiscus rhodopetalus*): Qld, N.S.W.
Albizia procera: Young shoots raw; Qld, N.T.
Atriplex hortense GARDEN ORACHE: N.S.W., Vic.
Blumea lacera: Cooked; Qld, N.T.
Brasenia schreberi: Qld, N.S.W., Vic., N.T.
*Capsella bursa-pastoris** SHEPHERD'S PURSE: Cooked; all States
Cardiospermum halicacabum BALLOON VINE: Qld, N.S.W., N.T.
*Carduus nutans** MUSK THISTLE: Stem pith boiled; Vic.
Cirsium vulgare SPEAR THISTLE: Peeled stems cooked; all States
Cissus repens NATIVE GRAPE: Raw; Qld, N.T.
*Coronopus didymus** LESSER SWINE'S-CRESS: All States
*Cynara cardunculus** WILD ARTICHOKE, CARDOON: N.S.W., Vic., S.A., W.A.

Cyanotis axillaris: Cooked; Qld, N.T.

*Echinochloa colonum** AWNLESS BARNYARD GRASS: Raw or cooked Qld, N.S.W., Vic., N.T.

*Echinochloa crus-galli** BARNYARD GRASS: Raw or cooked; all States

*Erechtites valerianifolia** BRAZILIAN FIRE-WEED: Cooked; Qld, N.S.W.

*Montia perfoliata** MINER'S LETTUCE: Raw or cooked; Vic., S.A.

*Moringa pterygosperma** HORSERADISH TREE: Boiled; Qld

Ottelia alismoides: Cooked; Qld, N.T.

Pluchea indica: Cooked; Qld, N.T.

*Sisymbrium officinale** HEDGE MUSTARD: All States

Tetragonia implexicoma: Cooked; N.S.W., Vic., Tas., S.A., W.A.

Vernonia cinerea: Cooked; Qld, N.S.W., N.T.

5 Roots, Tubers and Bulbs

WE HAVE GROUPED together in this chapter all the tuberous underground storage parts of plants. Some are roots and some stems; it may be difficult in a few cases for the layman to distinguish between the two, but usually it is easy enough as the stems bear scale leaves while the roots do not.

The suitability of these underground parts for food varies greatly with their age and with the season. An actively growing plant will tend to produce fleshy juicy organs, while older ones will be tough, fibrous and rather dry.

TREES AND SHRUBS

Acacia WATTLE

Although numerous wattles produce edible gum and about a dozen are recorded as having edible seeds or fruit, there are only a few species whose young roots are reported to have been cooked for food by the Aborigines. These are all tropical species and include *A. bidwillii*, *A. crassicarpa* and *A. holosericea*. (See pp. 161, 184.) Distribution: Qld, N.T.

Bowenia spectabilis

Bowenia is one of the cycads, and is unique among them in having bipinnate leaves. Its only two species are restricted to Queensland; *B. serrulata* near Rockhampton and *B. spectabilis* widespread in coastal, northern Queensland. At one time, railway refreshment rooms in that State were widely decorated with vases of its glossy, long-lived leaves resembling an enormous maidenhair frond. Now, both the refreshment rooms and the use of *Bowenia* in decoration are disappearing, and plastic fern has been found to be even more durable than *Bowenia*.

The deeply penetrating, carroty root of *B. spectabilis* was eaten by the Aborigines, but no details of preparation methods are known. They are likely to have included at least thorough baking, since untreated cycads are very poisonous.
Distribution: Qld

Brachychiton populneum KURRAJONG

Probably the most widely distributed species of *Brachychiton*, the kurrajong is a common tree in much of coastal and subcoastal eastern Australia. Young plants have a yam-like, tuberous root, often considerably broader than the stem above, and this was a popular item of food with the Aborigines. It is not clear whether or not they cooked or prepared it in any way before eating. Roots of young plants of *B. rupestre* (bottle tree) and *B. australe* (broad-leaved bottle tree) also were used, and probably the young roots of any species of *Brachychiton* could be used. (See also pp. 81, 173.)
Distribution: *B. australe* – Qld, N.T.
B. populneum – Qld, N.S.W., Vic., N.T.
B. rupestre – Qld

Codonocarpus cotinifolius BELL-FRUIT, NATIVE POPLAR

The most distinctive feature of this small tree of the drier country is its peculiar, green, bell-shaped fruits about 1 cm across; in fact its generic name means bell-fruit. According to one report the Aborigines used the sappy roots as food.
Distribution: All mainland States

Cordyline PALM LILY

Palm lilies are found mainly in rainforests and the wetter types of eucalypt forest. Plants resemble the garden *Dracaena*, with simple or sparsely branched stems bearing a crown of simple leaves up to a metre long. The fleshy, underground stem may be boiled and eaten as an emergency food, but we find it watery and fibrous.
Distribution: Qld, N.S.W.

Erythrina vespertilio BAT'S-WING CORAL TREE

Coral trees, with their blaze of orange-red flowers when the branches are leafless, are familiar in street and garden plantings in a number of Australian cities and towns. A native species, *E.*

vespertilio, occurs widely in subcoastal tropical and subtropical areas. It is a small, softwooded tree with prickly stems and orange-pink flowers rather less showy than those of the cultivated forms. The specific epithet *vespertilio* refers to the supposed resemblance of the leaflets of the trifoliate leaves to the wings of a bat.

Aborigines ate the roots raw.

Distribution: Qld, N.T.

Eucalyptus GUM-TREE

Gum-tree roots do not seem a promising source of food for man, but they were among the unlikely items used by the Aborigines, at least in the southern part of Australia. Bark from young roots roughly 1–4 cm thick was the part eaten. Possibly several species were used, but *E. caesia* and *E. dumosa* seem to be the only ones recorded with this use. During his expedition from Adelaide to King George Sound in 1840–41, E. J. Eyre wrote of this food as follows: 'At night we all made up our supper with the bark of the young roots of the green scrub. It appears to be extensively used for food by the natives in this district [Fowler Bay], judging from the remnants left at their encamping places. The bark is peeled off the young roots, put into hot ashes until nearly crisp, and then, the dust being shaken off, it is pounded between two stones and ready for use. Upon being chewed, a farinaceous powder is imbibed from between the fibres of the bark, by no means unpleasant in flavour, but rather sweet, and resembling the taste of malt; how far a person could live upon this diet alone, I have no means of judging, but it certainly appeases the appetite, and is, I should suppose, nutritious.'

Distribution: *Eucalyptus* represented in all States

Hibiscus

The species of *Hibiscus*, all of which have broad, showy, short-lived flowers, have roots which, although in most cases not strictly tuberous, are often reasonably fleshy when young, and well provided with starch. Those of several species were reported to be eaten, either raw or baked, by the Aborigines, and any can be regarded as safe. Chewed raw, they are rather mucilaginous and without much flavour. There is, of course, a lot of fibrous material to be spat out after the starch has been extracted. This is not surprising, as *Hibiscus* bark was one of the important sources of fibre for dilly bags, fishing lines and fishing nets. (See also pp. 86, 107.) Distribution: Some species in all States

Santalum murrayanum (*Fusanus persicarius*) BITTER QUANDONG

Bitter quandong, as the name suggests, has bitter and inedible fruit. However, in inland areas, the bark of the roots was roasted in the ashes and eaten by the Aborigines. This species is distinguished from the better known sweet quandong (p. 92) by the arrangement of some of the greyish leaves in whorls of three.
Distribution: All mainland States

CLIMBERS AND SCRAMBLERS

Cissus opaca NATIVE GRAPE, PEPPER VINE

This native grape has a wide distribution from coastal sand dunes to well inland. The compound leaves of the creeper have three to five leaflets gradually tapered towards their base. Vigorous root-tubers are developed, the largest of them about 30 cm long, 15 cm across. These can sometimes be seen exposed in road cuttings or on eroded creek banks and on sand dunes. Large tubers are very fibrous, but small ones are reasonably crisp and tender. The Aborigines ate them raw or baked, but the ones we have tried have not been particularly palatable. It was probably tubers of this species which Leichhardt discovered dug up by Aborigines on his expedition to Port Essington: 'The yams proved to be the tubers of a vine with blue berries; both tubers and berries had the same pungent taste, but the former contained a watery juice, which was most welcome to our parched mouths.'

Other native grapes with tubers which were roasted and eaten by the Aborigines are *Ampelocissus acetosa*, *Cayratia clematidea* and *C. trifolia*. (See also p. 64.)

Distribution: *Ampelocissus acetosa* – Qld, N.T.
Cayratia clematidea – Qld, N.T.
Cayratia trifolia – Qld, N.T.
Cissus opaca – Qld, N.S.W.

Dioscorea YAMS

Most people, if asked to name the most important vegetable foods of the Aborigines, would put yams at the top of the list. Yet the yams are tropical plants and so were unavailable to a very large proportion of the population. They were of course important to the Aborigines of the north, as to the native people of tropical areas in all continents. Several species of *Dioscorea* are cultivated as important farinaceous foods in Asia, America and Africa, and are a feature of native gardens in Papua and New Guinea.

The yam is the starchy subterranean tuber of *Dioscorea*; from this tuber arise the aerial stems, which are thin and wiry and climb by twining. Leaves are heart-shaped and net-veined. Male and female flowers are borne on separate plants but are fairly inconspicuous; the fruits are more obvious as bunches of dry, brown, three-winged capsules.

Some yams may be eaten raw, so require only digging and washing for preparation; this is not so easy as it sounds as the tubers may be quite deep in the soil – perhaps 50 cm underground. The small pencil-like tubers of *D. transversa*, the common yam of south Queensland and New South Wales, can be used in this way.

Many species, however, contain a poison which must be removed, so any with an acrid taste should be prepared well before eating.

Methods of preparation varied amongst the different Aboriginal tribes, but the general idea was the same. The acrid tubers should be sliced and soaked in running water for several hours, after which they may be cooked by boiling, baking or steaming. Some yams are very fibrous and with these it is recommended that they should be grated, and the fibrous matter sieved out so that the starch is retained with the water; the starch is then allowed to settle, the water is decanted off, and the 'mash' can be cooked. An alternative method used by the Aborigines of the Bloomfield River was to bake the tubers first, then mash them and strain out the fibrous matter; the 'mess' was then washed in up to eight changes of water, strained, and eaten the same day before it fermented.

We have eaten *D. transversa* with no treatment other than washing and boiling like a carrot; the flavour was quite pleasant, similar to that of a waxy potato.

Distribution: Qld, N.S.W., N.T.

Eustrephus latifolius WOMBAT BERRY

This tough twiner with parallel-veined leaves produces a cluster of white, tuberous roots which are edible raw. They are crisp and whitish but have a slightly earthy flavour. The plant is remarkably similar to *Geitonoplesium cymosum* (p. 113) but its yellow fruits and fringed petals distinguish it.
Distribution: Qld, N.S.W., Vic.

Glycine tabacina

This slender twiner with trifoliate leaves and small, pink pea-flowers is very widespread in open situations. Its taproot is reported to have the flavour of liquorice, and to have been chewed by the Aborigines.
Distribution: All mainland States

Ipomoea brasiliensis (*I. pes-caprae*) GOATSFOOT CONVOLVULUS

One of the early colonizers of coastal sand dunes in New South Wales and Queensland is the goatsfoot convolvulus. This trails across the sand and is easily recognized by its purple, bell-shaped flowers and the two-lobed leaves whose supposed resemblance to a goat's hoof is responsible for the epithet *pes-caprae.*

The tap root gradually becomes fleshy, often 3–4 cm thick, and, in some places where erosion has left sand cliffs at the top of the beach, these fleshy tap roots can be seen going down about a metre. Almost throughout the root, starch grains occur very abundantly, so it is not surprising that the Aborigines used the roots as food after baking and pounding. Boiling is also suitable preparation. There is no distinctive flavour, and the material is very fibrous. If anything more than the starch grains is to be swallowed, it is as well to cut the root into discs; otherwise it is like trying to swallow rope. Distribution: Qld, N.S.W.

Ipomoea spp.

There are several other climbing or trailing species of *Ipomoea* whose fleshy tap roots were reportedly roasted and eaten by the Aborigines. They include *I. eriocarpa*, *I. gracilis*, *I. graminea*, *I. tuba*, *I. polymorpha*, and *I. velutina.*
Distribution: Some species in all States

Macrotyloma uniflorum (*Dolichos biflorus*)

Another of the several native beans, this northern Australian species with sprawling or twining stems can be distinguished by its usually solitary yellow flowers. Its fleshy root was roasted and eaten by the Aborigines.
Distribution: Qld, N.T.

Marsdenia flavescens YELLOW MILK-VINE, NATIVE POTATO

The yellow milk-vine is a tall twiner found mainly in rainforests. It bears short clusters of small yellowish flowers, and the opposite leaves have a finely hairy, pale undersurface. Stems exude a latex when injured.

Aborigines of the Hawkesbury River area used the tuberous roots as food, but they required careful preparation, as Captain Hunter's Expedition in 1788 found out: 'It had much the appearance of horseradish and had a sweetish taste, and having swallowed a small quantity, it occasioned violent spasms, cramps in the bowels, and sickness at the stomach'.
Distribution: Qld, N.S.W., Vic.

Marsdenia viridiflora NATIVE POTATO

Another twiner, this species has small green flowers, and lacks the hairy character of *M. flavescens*. It is a plant of warmer parts of Australia such as the Brigalow scrub areas of Queensland.

The tubers are reported to be watery and sweetish, and to have been used by the Aborigines for allaying thirst.
Distribution: Qld, N.S.W., N.T.

Stemona australiana

Stemona is a good example of those plants which were staple foods of the Aborigines but which are scarcely known at all by present-day white inhabitants.

S. australiana is a rainforest plant somewhat similar to *Dioscorea* and also producing edible fleshy subterranean tubers. It too is a twiner with alternate leaves having 3–5 main veins; the leaves are parallel-veined and the flower parts are in fours, whereas in *Dioscorea* the leaves are net-veined with flower parts in threes.
Distribution: Qld

Trichosanthes palmata THOWAN

This coarse plant of the pumpkin family is one of the comparatively few climbers of the open forest. It is a vigorous tendril climber with large, lobed leaves and a stout reddish stem; the flowers are white with long-fringed petals, and are followed by globular gourds 6–8 cm diameter. However in the case of thowan it is not the fruits which are eaten but the large underground root-stock or 'yam' which, like the true yam, may be quite deep in the ground and so require considerable effort to dig up. The roots should be roasted or boiled before eating.
Distribution: Qld, N.S.W.

Vigna

Amongst the members of the large family Leguminosae, which can be recognized as 'beans' by a general similarity of leaf and flower form to the domestic green bean, is *Vigna*, a genus which includes the cow pea of cultivation. This genus has prostrate, trailing or twining plants with trifoliate leaves and yellowish pea flowers; the native species are restricted to warmer parts of Australia.

Several species of *Vigna* have edible roots. *V. marina*, *V. radiata* and *V. vexillata* were all used by the Aborigines after roasting. *V. lanceolata*, which was treated similarly, has a long parsnip-like root said to be 'one of the best vegetables available to the natives'; this species is interesting in that it produces, as well as the ordinary pods, some underground ones resembling peanuts.

Distribution: *V. lanceolata* – Qld, N.S.W., N.T.
V. marina – Qld, N.S.W., N.T.
V. radiata – Qld, N.T.
V. vexillata – Qld, N.S.W., N.T.

HERBS

Alocasia macrorrhizos CUNJEVOI

The cunjevoi, a plant of rainforest gullies, resembles the arum lily of cultivation but has much larger leaves and highly perfumed yellow-green flowers. Its robust stems, up to 10 cm thick, sometimes stand erect for half a metre, trailing brown, fibrous remains of leaf-bases, but are usually more or less prostrate. The stems contain considerable quantities of starch but are very fibrous. Young side shoots arising from the main stem can be eaten but only after very thorough baking. The Aborigines used them only after repeated alternate baking and pounding.

In addition to the numerous, microscopic needle-crystals in the tissues, there is a toxic alkaloid which causes almost immediate pain to mouth and throat if any part of the plant is chewed. This alkaloid has caused the death of children in Australia. One of our students once mistook the underground stem of the cunjevoi for that of native ginger, and although only a small fragment was chewed, the resulting pain and swelling prevented his taking any but liquid foods for several days.

Distribution: Qld, N.S.W.

Alpinia caerulea NATIVE GINGER

In native ginger, as in most other members of the ginger family, an underground creeping stem produces erect, unbranched stems bearing long leaves in approximately one plane. In the case of *Alpinia caerulea*, often found in and near the margins of rainforests, the erect canes may reach a couple of metres in height; the leaves are frequently marked by black, tar-like streaks of a parasitic fungus.

The underground stem has something of the form of the commercial ginger but is not so closely branched. Old parts of the underground stem are too fibrous to be eaten, but the young tips are tender and have a distinct ginger flavour. There is considerable variation in the strength of the flavour, some plants being too strong for most palates. (See also p. 95.)

Distribution: Qld, N.S.W.

Amorphophallus galbra

Amorphophallus is closely related to cunjevoi and taro; the flowering spike is obviously similar but the leaves look rather different. In this plant the leaf is deeply divided, and the petiole conspicuously mottled purplish and green. The leaf is solitary and more than a metre in height, arising from an underground tuber. The flower-spike has a mottled stalk, described by F. M. Bailey, the Colonial Botanist of Queensland, as 'resembling the marking of a carpet snake'; the spike is ensheathed by a large green bract blotched with white and purple.

It has been reported that the tuber, leaf-stalk and fruit of this species were all eaten by the Aborigines after baking. This is another of those plants which cannot be eaten raw, but must be thoroughly baked before use. Various species are used in different tropical countries; we have seen *Amorphophallus* in cultivation in a Papuan native garden.

In Australia the genus is restricted to tropical regions of high rainfall.

Distribution: Qld

Anguillaria dioica EARLY NANCY, BLACKMAN'S POTATOES

One of the numerous small wildflowers of the lily family, the distinctive feature of early nancy is the purple band near the base of each perianth segment; together these bands form a purple ring in the white flower. The small bulb was reportedly eaten by the Aborigines.

Distribution: All States

Aponogeton natans (*A. monostachyus*)

Some species of *Aponogeton* are grown as aquarium ornamentals. *A. natans* is a widespread representative of the genus in tropical Australia; its leaves vary considerably in form but are mostly elongate heart-shaped with five or seven distinct longitudinal veins, and may be either submerged or floating on the surface. The white or cream flowering spike, with its unexpanded apical part often bent downwards, bears a fancied resemblance to a swan's head and neck.

Partly buried in the mud is a tuberous, starchy stem which was eaten raw or roasted by the Aborigines and was said to be of excellent taste. The tuber of *A. elongatus* was used similarly.

Distribution: *A. elongatus* – Qld, N.S.W., W.A., N.T.
A. natans – Qld, N.T.

Boerhavia diffusa TAR VINE, TAH VINE, HOG WEED

Tar vine is a scrambling, semi-prostrate herb with opposite leaves, widespread from the coast to well inland. It is not striking in appearance, but the very small pink flowers in groups of 1–3 at

the ends of slender stalks give a guide to its identity. The leaves of plants in southeast Asia have been reported edible after cooking but, to the Aborigines, the important part of the plant was its fleshy taproot which was widely eaten after baking.
Distribution: All mainland States

Bulbine bulbosa BULBINE LILY, WILD ONION, NATIVE LEEK

A member of the lily family, *Bulbine bulbosa* has a slender bulb with a tuft of onion-like leaves and a flowering stalk with several bright yellow flowers, each petal and sepal with the midrib greenish on the lower side. The six distinctive anthers each have a brush of yellow hairs near the apex. Plants are widespread in the drier areas of the country, in some places occurring in sufficient quantity to form almost a sheet of yellow when in flower, although flowering does not necessarily occur every year. The Aborigines are reported to have eaten the bulb.
Distribution: Qld, N.S.W., Vic., S.A., Tas.

Burchardia umbellata MILKMAIDS

This attractive plant of the lily family has a cluster of flowers at the end of a slender, rigid stalk, the six white petals and sepals contrasting with the central, three-angled reddish-purple ovary which increases considerably in size before the petals and sepals finally fall. Although widely distributed, *Burchardia* is particularly common in heathland.

The roots were reported to have been eaten by the Aborigines.
Distribution: All States

Colocasia esculenta TARO

Taro is a plant which has been in wide use for centuries. It occurs in cultivation in tropical Asia and Africa, and is common in native gardens in New Guinea and Polynesia. It is also quite commonly found growing wild in swampy places or on creek banks in the tropics and subtropics.

The plant with its large, heart-shaped leaves resembles the arum lily and elephant's ear familiar to home gardeners; the leaf-stalk is attached to its blade towards its centre rather than at its margin, and at this point there is usually a purplish spot; the leaf-stalks also are generally purple.

Being very rich in starch, the tuberous underground stem is widely used for food; it must not be used raw, but should be thoroughly boiled or baked after cleaning. Some of the wild forms are very acrid. Joseph Banks in his *Endeavour* Journal notes that 'the immence sharpness of every part of this vegetable before it is dressd makes it probable that any people who have not learnd the uses of it from others may remain for ever ignorant of them.'

The leaves are recommended by Banks as 'little inferior to spinage', but they also must be boiled as they are poisonous if eaten raw. Distribution: Qld, N.T.

Crinum flaccidum DARLING LILY, MURRAY LILY, MACQUARIE CRINUM

There are several species of *Crinum* in Australia, some in dry inland areas, some in coastal districts and one found even among mangroves. Most have a large underground bulb. Their flowering stalk bears a cluster of large, handsome, white six-petalled flowers, usually two or three opening each day about dusk.

Although it seems likely that the Aborigines would have made use of most of the species, there seems to be a record of edibility for only one species, *Crinum flaccidum*, whose common name varies with the name of the river on whose flood plain it is found. The edible qualities of its bulb have been described as follows: 'This exceedingly handsome white-flowered plant, which grows back from the Darling, has bulbs which yield a fair arrowroot. On one occasion, near the town of Wilcannia, a man earned a handsome sum by making this substance when flour was all but unobtainable.' Distribution: Qld, N.S.W., Vic., S.A., N.T.

Curcuma australasica A NATIVE GINGER

C. australasica is a member of the ginger family. Its ornamental flowering spike, up to 30 cm high, is considerably shorter than the leafy shoot and arises usually a few inches away from it. The flowers are yellow, but the most decorative parts of the spike are the large pink bracts. Its cylindrical, tuberous roots were roasted by the Aborigines before being eaten.

The underground stem of a related species, *C. longa* of the East Indies, yields turmeric, an important ingredient of curry powder. Distribution: Qld

Dichopogon strictus CHOCOLATE LILY, GRASS LILY

A chocolate scent is unusual in flowers, and helps to distinguish this plant. The purple flowers with three broad, crinkled petals are well-spaced along a slender branched stalk, and plants occur widespread in open forest and heathland.

In spite of the intriguing scent of the flowers, it is not they which are edible, but rather the roots which are reported to have been eaten by the Aborigines.
Distribution: All States

Gastrodia sesamoides POTATO ORCHID, NATIVE POTATO, CINNAMON BELLS

The potato orchid belongs to a small group of leafless, non-green orchids that obtain their nutrients through association of their roots with those of another plant. In spring or early summer, the tuberous, underground stems produce an erect flowering stalk, up to a metre high, with fleshy, bell-shaped flowers, brown on the outside and cream on the inside. The fleshy tubers were roasted and eaten by the Aborigines and, according to one report, this species was one of the principal plants used by the Tasmanian Aborigines. The flavour has been described as resembling beetroot but watery and insipid.
Distribution: All States

Geranium AUSTRALIAN CRANESBILL

Geraniums are slender, spreading herbs with rounded, deeply lobed leaves and small pink or lilac flowers. A fancied resemblance of the elongate fruit to a crane's beak is responsible for both the generic name and the common one. Some species develop a tuberous taproot which Aborigines are reported to have roasted for food. The only one we have tried contained large quantities of starch but was very unpalatable.
Distribution: All States

Haemodorum BLOODROOT

Species of *Haemodorum* have a tuft of grassy or long cylindrical leaves and flowers of a purplish-black colour. The short, erect, underground stem is often enclosed by the sheathing bases of the

leaves, giving it the appearance of a slender bulb. J. D. Hooker, the English botanist, listed the roots, presumably these tuberous stems, as being edible. We have not sampled them and are not particularly encouraged to do so after reading the account of James Backhouse who encountered their use by Aborigines at King George Sound in 1837: 'Among their articles of food, is the long bulb, of *Hemodorum teretifolium* [now *H. corymbosum*], which they call Mean; and poor fare, it truly is, occasioning their tongues to crack grievously: it is prepared for eating by being roasted, and beaten up with the earth, from the inside of the nest of the White Ant, or with a red substance, found on burnt ground.'
Distribution: Qld, N.S.W., W.A.

Hypoxis hygrometrica GOLDEN WEATHER-GLASS

This rather inconspicuous plant has a tuft of narrow grass-like leaves 12–30 cm long, usually bearing long hairs. The flowers are small and yellow, like a six-pointed star, produced either singly or sometimes two or three together.

The short underground stem of *Hypoxis*, which is common in grassland in moist areas, is thickened and bears a thick cluster of roots. This underground stem was eaten raw by the Aborigines.
Distribution: Qld, N.S.W., Vic., Tas.

Lavatera plebeia AUSTRALIAN HOLLYHOCK

The white to lilac flowers of the Australian hollyhock have the general appearance of those of *Hibiscus*, but have only three segments in the outer calyx compared with six or more in *Hibiscus*. *L. plebeia* is a tall herb up to 2 m high, and may be either a perennial or an annual. Roots of a white-flowered variety were used by the Aborigines in South Australia as food, and were said to have something the consistency of parsnips.
Distribution: All States

Microseris scapigera YAM DAISY, NATIVE DANDELION

This is a widespread plant of the southern part of Australia. Superficially bearing a strong resemblance to a dandelion or cat's-ear, it can be distinguished from those plants by the parachute plumes arising directly from the top of the fruit rather than from the top of a slender beak. The fleshy roots were used extensively by the Victorian Aborigines who roasted them.

There seems to be room for differences of opinion on native foods. One author reports that the tubers of the yam daisy are sweet with a flavour of coconut, while another suggests that they taste more like a radish than a potato.
Distribution: N.S.W., Vic., S.A., Tas., W.A.

Murdannia graminea (*Aneilema gramineum*)

A dull name here hides an attractive little plant widely distributed in grassy areas. From a rosette of somewhat grass-like leaves with a few stiff hairs a flowering stalk about 30 cm high arises and bears ornamental, mauve, three-petalled flowers something like those of the wandering jew. The tuberous roots containing a small quantity of starch show a central pink or purple area when cut or broken. There seems to be no record of the roots being used by the Aborigines, but we have tried them both raw and cooked and found them quite harmless and without any unpleasant flavour. They would provide an easily obtainable source of emergency food in some areas. Distribution: Qld, N.S.W., N.T.

Nymphoides (*Limnanthemum*) MARSHWORT

The species of *Nymphoides* are like water-lilies; they are aquatic plants with broad leaves which, in some species, float on the surface of the water. Aborigines ate the tubers of two of the species, *N. crenata* (wavy marshwort) and *N. geminata* (entire marshwort). Both have yellow flowers but those of *N. crenata* have prominently fringed petals with a central membranous wing, while those of *N. geminata* have only a slight fringe and no central crest.
Distribution: *N. crenata* – All mainland States
N. geminata – Qld, N.S.W., Vic., S.A., N.T.

Orchids

Many terrestrial orchids have fleshy underground parts, in some cases small whitish tubers of about pea size. Species of the following genera are recorded as having tubers which were eaten by the Aborigines: *Caladenia, Cryptostylis, Diuris, Dipodium, Geodorum, Glossodia, Lyperanthus, Microtis, Prasophyllum, Pterostylis, Thelymitra.*
Distribution: All States

*Oxalis corymbosa** **PINK SHAMROCK**

Leaves of the pink shamrock arise from the top of a subterranean tuber. It produces, beneath the soil, a large number of small bulbils which scatter in unwary hands and spread this highly undesirable garden weed. The tuber is carrot-like in shape, up to about 8 cm in length, and of a translucent white colour; it is succulent and crisp and very pleasant to eat raw – quite sweet with no obvious trace of acid. (See also p. 125.)
Distribution: Qld, N.S.W., Vic., S.A.

*Picris hieracioides** **HAWKWEED PICRIS**

Many of the introduced plants which have become established as weeds in Australia are members of the family Compositae, which includes sunflowers and dandelions. The hawkweed picris is one of these; it is a native of Europe which has become naturalized in all the eastern States of Australia. The plant has general similarity to dandelion in the golden flower-heads, but the leaves are alternate on the stem rather than forming a basal rosette. Stems and leaves are harsh to the touch because of the presence of a layer of short stiff hairs; under magnification these hairs are seen to be anchor-shaped, i.e. they have two small hooks at the apex.

The explorer Major Mitchell reported in 1838 on extensive use of *P. hieracioides* by Aborigines of the interior: 'Vegetables are thus cooked, I am told, by placing the root or plant between layers of hot embers, until it is heated and softened. The stalks . . . resembled those of the potato, and they could only be chewed, such food being neither nutritious nor palatable, for it tasted only of smoke.' Later, he wrote 'on its roots the children chiefly subsist. As soon almost as they can walk, a little wooden shovel is put into their hands, and they learn thus early to pick about the ground for these roots . . .'

As it is unlikely an introduced weed could, in fifty years of settlement, have become so established as to be a staple food of Aborigines in the inland, it is probable that the plant referred to by Mitchell was the variety *squarrosa* of the species; this is thought to be native, but has a less wide distribution than indicated below.
Distribution: Qld, N.S.W., Vic., Tas., S.A.

Podolepis jaceoides SHOWY PODOLEPIS

Podolepis is a handsome member of the daisy family with several species confined to Australia. The yellow heads are distinctive with the ring of long, deeply incised ray florets surrounding the compact central mass of disc florets. The only record of the edible nature of this plant we owe to James Backhouse who visited Port Phillip in 1837 and wrote: 'One of the plants which yields them sustenance is *Podolepis acuminata* [now *P. jaceoides*], which is about a foot high, and has flowers, in some degree, resembling sweet sultan, but of a deeper yellow: it abounds on rich soils, especially about the margins of salt-marshes, and has a thickened root, compared by some to a potato.'
Distribution: Qld, N.S.W., Vic., S.A., Tas.

Portulaca

In addition to the well-known pigweed, there are other species of *Portulaca* in Australia, some with tuberous roots which were roasted and eaten by the Aborigines. Two of these are *P. napiformis* and *P. australis*, both with much narrower leaves than pigweed and both confined to the northern part of Australia.
Distribution: Qld, N.T.

Tacca leontopetaloides POLYNESIAN ARROWROOT

This unusual plant found in coastal eucalypt country in northern Australia has usually a single leaf up to a metre or more high with a triangular, much divided frond-like blade. Arising close to it is a single flowering stalk, with flowers in a terminal cluster mixed with long, pendulous processes which give it an unmistakable appearance.

Underground, there is a potato-like tuber rich in starch but bitter and poisonous if untreated. It has been an important food plant and source of starch in various parts of the tropics, and in Australia was used widely by the Aborigines. Preparation varied from district to district but, essentially, involved grating or pounding, washing and baking.
Distribution: Qld, N.T.

*Taraxacum officinale** DANDELION

That widespread and handsome weed, the dandelion, has already been mentioned as having edible leaves. The roots also have been cooked for food, sometimes from choice, sometimes from necessity. Several authors report that during a famine on the island of Minorca the inhabitants survived on roots of dandelion, their crops having been destroyed by locusts. In Japan the roots are used as a vegetable. (See also pp. 131, 179.)
Distribution: All States

THYSANOTUS

The most distinctive feature of *Thysanotus* is the prominently fringed margin of the three broad, purple petals. The tuberous roots of two open forest and grassland species were eaten by the Aborigines.

Thysanotus patersonii TWINING FRINGE-LILY

Leaves disappear early, and the weak flowering stem is climbing.
Distribution: N.S.W., Vic., Tas., S.A., W.A.

Thysanotus tuberosus COMMON FRINGE-LILY, FRINGED VIOLET

In this species the basal tuft of grassy leaves persists and the flowering stalk is non-climbing.
Distribution: All mainland States

Trachymene incisa WILD PARSNIP

Wild parsnip is a pretty little wildflower of coastal districts. From a basal rosette of deeply divided leaves springs a slender flowering stalk with the branches topped by domed or flattened clusters of small white flowers. There is a thickened taproot like a small parsnip. This is parsnip-like in flavour as well, and can be eaten with pleasure either raw or cooked.
Distribution: Qld, N.S.W.

Trachymene glaucifolia NATIVE CARROT

Found in inland areas, this species of *Trachymene* differs from the previous one in having blue flowers. It is reported that the root is

edible either raw or cooked; cooking would have been by baking in the ashes of the campfire.
Distribution: Qld

*Tragopogon porrifolius** SALSIFY, OYSTER PLANT

Although now comparatively rare in cultivation, salsify was once more popular, being grown for its edible, long tap-root which, as its second common name implies, has a suggestion of seafood in its flavour. It has become a weed in cooler areas of Australia. The plants are erect, thistle-like but with slender pointed leaves, and contain milky latex; the purple flowers are produced in single heads.
Distribution: All States

Triglochin procera WATER-RIBBON

Floating ribbon-leaves along the surface of a pool belong unmistakably to the aquatic *Triglochin procera.* Leaves may be a metre or more long but only 1–1·5 cm wide. The plants persist in drying mud, but the leaves become looped and twisted.

The flowering spike carries densely placed, small, green flowers. Stigmas mature before stamens, so often the upper flowers reveal their small, lilac stigmas while the lower part of the spike has a yellowish tinge caused by the maturing of the anthers. As the pollen is shed, much of it collects in the perianth lobes so that when the spike is tapped a great cloud of yellow pollen is released.

Some of the roots become swollen to form white elliptical tubers, and these were baked and eaten by the Aborigines.
Distribution: All States

Typhonium brownii BLACK ARUM LILY

A member of the same family as the arum lily of cultivation, this herbaceous plant is found usually on rainforest margins and in moist gullies. Its leaves reach a height of 40 cm, the adult leaf-blade usually having the form of an arrowhead, although it varies considerably and may occasionally be divided into three distinct segments. The flowering part has the general form of the arum lily, but the showy spathe which is white in the arum is here a dull purple-black, and it is this which is responsible for the plant's common name. Perhaps even more striking than the colour is the odour of the flowering part – a strong, unpleasant smell most reminiscent of faeces.

Underground there is a short, horizontal, tuberous stem. Its cells are as densely packed with starch as are those of a potato, and it was eaten by the Aborigines after repeated roasting and pounding. If the cut surface is applied briefly to tongue or lips there is quickly a severe biting pain which persists for about an hour. We boiled some of the stem for about an hour in two changes of water and found there was no immediate biting sensation on careful testing; this encouraged us to eat approximately a teaspoonful, and we found that it had a pleasant flavour something like that of a bunya nut. We were therefore surprised (but not pleased) when, about fifteen seconds later, it became apparent that plenty of the toxin was still present. Mouth, tongue and throat were affected, causing us considerable distress for a couple of hours. Symptoms disappeared completely only after three days. Baking, with its higher temperatures, is probably more effective in destroying the poisonous principle than is boiling, but after our experience we cannot recommend the species at all.
Distribution: Qld, N.S.W., N.T.

Typhonium angustilobium

Similar in general to the previous species, *T. angustilobium* may be distinguished, as its Latin name suggests, by the extremely narrow leaf segments. It was used by Aborigines in northern Australia after treatment like that given *T. brownii*. We have not tried this species, and after our experience with *T. brownii* do not intend to do so!
Distribution: Qld, N.T.

Zingiber officinale var. *cholmondeleyi* QUEENSLAND GINGER

Commercial ginger is the underground stem of *Zingiber officinale*, a plant with a general appearance similar to that of *Alpinia*. A native variety of *Z. officinale* found in northernmost Queensland has been strongly recommended as a potential source of ginger, but remains little known. One difficulty would be the pronunciation of the varietal name!
Distribution: Qld

GRASSES AND SEDGES

*Agropyron repens** ENGLISH COUCH, QUICK-GRASS

It is unlikely that anyone will want to make a meal from this naturalized grass, but it was reported in the eighteenth century by the British botanist Withering that, in times of scarcity, the roots were ground to a meal and used to make bread.
Distribution: N.S.W., Vic., Tas., S.A., W.A.

Cyperus rotundus NUTGRASS

Nutgrass is one of the most troublesome weeds in gardens in parts of coastal eastern Australia. The slender, underground stems form hard, spindle-shaped tubers or 'nuts' at intervals, and if the string of tubers is broken up by digging, each 'nut' will start into active growth again. When fresh tubers are cut open they have a strong, aromatic odour which one writer has appropriately likened to a famous brand of chest liniment. In this condition they are very unpalatable. If sliced and boiled for fifteen minutes the unpleasant flavour is reduced, but they are still not really palatable.

C. esculentus is a similar plant of more inland localities, and its tubers were eaten, raw or roasted, by the Aborigines.
Distribution: *C. esculentus* – Qld, N.S.W.
C. rotundus – All mainland States

Eleocharis dulcis TALL SPIKE-RUSH, WATER CHESTNUT

E. dulcis is one of the sedges forming dense stands fringing swamps and streams. It has often been mistakenly identified as *E. sphacelata*. Its leafless, cylindrical stems up to 1 m high are 1–10 mm thick; the central hollow is bridged at frequent intervals by membranous diaphragms. Underground, there are small, round, hard tubers which were eaten by the Aborigines either raw or after baking, and in some cases after grinding into flour.

It is probably the tubers of this species which the Aborigines offered Leichhardt and which he appreciated so much. He wrote in his journal that it 'had a sweet taste, was very mealy and nourishing, and the best article of the food of the natives we had yet tasted.'

The water chestnut sometimes seen in Australian shops as a canned product from China is the cultivated form of this species.
Distribution: Qld, N.T.

Lepironia articulata

One of the common sedges forming dense stands in swamps and along the margins of lakes and quiet streams is *Lepironia articulata*. The tall, cylindrical stems may stand out of the water for up to a couple of metres and, from a distance, can be distinguished from most other plants of similar form by a greyish colour. Borne on one side, a few centimetres below the pointed apex of the stem, is a brown, cone-like flowering branch. The Aborigines are reported to have eaten the underground stems.
Distribution: Qld, N.S.W.

Scirpus CLUB-RUSHES

Like other sedges, species of *Scirpus* grow mainly in swampy places. Underground stems produce erect branches, usually triangular in section, bearing one to several short cone-like flowering branches at the apex. In Australia there are three species, *S. litoralis*, *S. maritimus* and *S. validus*, in which the underground stem is reported to be edible. They probably require pounding or grinding, followed by baking, to render them eatable.
Distribution: Some species in all States

FERNS

Blechnum indicum BUNGWALL FERN

Bungwall fern is particularly common throughout the swampy, low lying, often peaty country known in southern Queensland and northern New South Wales as wallum swamp. In shady positions the coarse, simply pinnate fronds reach nearly 2 m in height, but in better illuminated places are much shorter. Its horizontal, underground stems contain large quantities of starch.

It is to Dr T. L. Bancroft, a medical practitioner of Brisbane in the 19th century and an outstanding scientist, that we owe our knowledge of the use of this plant by the Aborigines. According to Bancroft, the bungwall and the bunya (*Araucaria bidwillii*) were the most important vegetable foods of the Aborigines of southern Queensland. The stems were dug out with sharp sticks, partly dried in the sun, roasted and bruised with a sharp stone against a slab of bloodwood. In 1894 Bancroft reported a recent visit to Bribie Island, near Brisbane, where there is no naturally occurring hard stone. There he succeeded in finding several bungwall stones, pieces of water-worn basalt imported from the mainland and split by fire.

According to Bancroft, almost every tribe had a different name for *Blechnum indicum.* Bungwall is probably one of these, but the Aborigines living in Brisbane in Bancroft's time regarded bungwall as the white man's name for the plant they knew as 'tong-wun'.

B. orientale is a northern Queensland species whose stems seem to have been used in much the same way as those of *B. indicum.*
Distribution: Qld, N.S.W., N.T.

Lygodium scandens CLIMBING MAIDENHAIR

In most climbing plants it is the stem that twines or scrambles up some support, but in *Lygodium* the leaf is the climbing structure, growing almost indefinitely so that a single frond may reach a height of 6 m. Dense thickets of this fern often occur in swampy, coastal country. The branches of the frond have a superficial resemblance to the frond of a maidenhair fern but the two plants are not closely related. The slender, horizontal, underground stems are fleshy and brittle. When James Backhouse visited Moreton Island in 1836 he noted in his diary that these stems were eaten by the Aborigines.
Distribution: Qld, N.S.W.

OTHER UNDERGROUND PARTS

The following species are reported to have edible roots or underground stems. In some cases, no information is available on the preparation, if any, which the plant part underwent prior to eating.

Abelmoschus ficulneus (*Hibiscus ficulneus*): Qld, N.T.
Abelmoschus moschatus (*Hibiscus rhodopetalus*): Qld, N.T.
Acrostichum aureum MANGROVE FERN: Roasted; Qld, N.T.
Aneilema siliculosum: Raw and roasted; Qld, N.T.

Arthropodium milleflorum PALE VANILLA-LILY: Qld, N.S.W., Vic., Tas., S.A.
Atylosia reticulata: Roasted; Qld, N.T.
Brunoniella acaulis (*Ruellia acaulis*): Raw; Qld
Caesia vittata: All States
Calostemma sp.: Bulb cooked; N.T.
Cartonema parviflorum: Cooked; Qld, N.T.
Cartonema spicatum: Cooked; Qld, N.T.
Ceropegia cumingiana: Qld
Cochlospermum sp.: Baked; Qld, N.S.W., N.T.
Curcilago ensifolia: Roasted; Qld
Cyclosorus goggilodus: Roasted; Qld, N.S.W., W.A.
Eriosema chinense: Cooked; Qld, N.T.
Erodium crinatum: Cooked; All mainland States
Hardenbergia retusa: Roasted; Qld
Hornstedtia scottiana: Qld
Labichea buettneriana: Roasted; Qld
Leschenaultia divaricata: Qld, N.T.
Limacia esiangkara: Qld
Microstemma tuberosum: Raw or roasted; Qld, N.T.
Psoralea badocana: Roasted; Qld, N.T.
*Scolymus hispanicus** GOLDEN THISTLE: Vic.
Tribulus solandri: Roasted; Qld, N.T.

6

Flowers

A NUMBER OF the older flowers of cultivation have been put to culinary use for a long time, both in herbal remedies and in recipes where their beauty and perfume may greatly enhance a dish; crystallized violets and rose petal jam are two examples familiar to many people. There has not been much similar tradition connected with our native flowers, but the possibilities are here; perhaps it will be found that our violets are suitable for crystallizing, although they lack the perfume of the cultivated species. We include here a few species which may be used in different ways.

TREES AND SHRUBS

Acacia WATTLE

In almost every month of the year, there are wattles coming into flower somewhere in Australia, bringing delight with their abundant, golden, sweet-scented blossoms. The flowers have no nectar but they produce copious amounts of pollen which is eagerly sought by bees. Wattle perfume is light but very definite, and quite unmistakable. Advantage can be taken of this scent by using the blossoms in fritters; the flowers should be stripped from the stems, mixed in a light batter, and fried to make small fritters which go very well served with sugar and whipped cream. The flavour is not strong but, if sufficient flowers are used, it comes through well. As an alternative, try mixing some of the flowers in the batter prior to making pikelets for a truly Australian dish.

Actually the idea for this method of using wattle flowers comes from a recipe of the famous Escoffier, who used the cultivated *Acacia* flowers, and steeped them in liqueur brandy and sugar before coating with batter and deep-frying.

PLATE 6
1 Mistletoe *p. 43*
2 Apple-berry *p. 62*
3 Native cherry *p. 33*
4 Greenhood orchid *p. 151*
5 *Caladenia* orchid *p. 151*
6 Weeping pittosporum *p. 91*
7 Nardoo *p. 71*
8 Bidgee-widgee *p. 177*
9 Cat's ear *p. 122*

We have used *Acacia spectabilis*, *A. oshanesii* and *A. podalyriaefolia* for fritters; all were very pleasant to eat, the first having the most distinct flavour. Probably any species could be used similarly.
Distribution: Some species in all States

*Carica papaya** PAWPAW, PAPAYA

One of the best tropical fruits in cultivation, the pawpaw is grown widely, particularly in Queensland. Although hardly naturalized, it is met with at times as a stray from cultivation.

Male and female flowers are normally borne on separate trees and, of course, it is the female flowers which produce fruit. The male flowers are of importance in providing pollen, but may be of further use to man as a food. Sprays of the flowers may be seen on sale in food markets in southeast Asia.

The flowers are boiled in several changes of water for use as a vegetable; the changes are necessary to remove bitterness. Similar treatment is given to green fruits and to young leaves and leaf-stalks to make them eatable.
Distribution: Qld

*Sambucus nigra** EUROPEAN ELDER, COMMON ELDER

Although elder flowers have not been used much in Australia, they have entered into the diet in their native Europe in a wide variety of ways for centuries. The large, flat-topped, fragrant flower-clusters can be eaten raw or fried in fritters; they have been used also in preparation of drinks, both a kind of tea and a wine, and are used at times to give added flavour to jams made from various fruits. A remarkably versatile flower! (See also p. 56.)
Distribution: N.S.W., Vic., Tas., S.A.

HERBS

*Helianthus annuus** SUNFLOWER

The unopened flower-heads of the sunflower were in earlier times boiled and eaten with butter like artichokes. (See also pp. 97, 178.)
Distribution: Qld, N.S.W., S.A.

Lomandra MAT-RUSH

The flowers of some species of mat-rush are very sweetly scented. They are reported to have been eaten by the Aborigines but we have not tried them. (See also p. 124.)
Distribution: Some species in all States

*Onopordum acanthium** SCOTCH THISTLE, HERALDIC THISTLE

This is the familiar heraldic Scotch thistle. Introduced into Australia, it has become a weed in southern States; it is a handsome, vigorous plant with erect, purple flower-heads, and, as is well known, is very prickly. The plant is covered all over with loose, woolly hairs which give it another common name of cotton thistle.

The large green base of the flower-head has been used in England, cooked and eaten like a globe artichoke.
Distribution: N.S.W., Vic., S.A., Tas.

Typha BULRUSH

The flowering stem of the bulrush consists of a mass of short-lived male flowers near the tip of the spike, and, below it, tightly packed female flowers which eventually develop into the brown rods so characteristic of bulrushes. Over a short period, the male flowers shed large quantities of pollen; often, a tap on the stem is sufficient to cause the release of a heavy yellow cloud of grains. In India and New Zealand, this pollen has been collected in quantities large enough to justify baking into cakes.

It has been reported also that the young female part of the flowering spike, before the male flowers above shed their pollen, can be eaten either raw or cooked, the hard core being discarded (see also p. 132).
Distribution: Some species in all States

Wahlenbergia AUSTRALIAN BLUEBELL

An anthropologist working amongst Australian Aborigines in the early decades of the century was delighted one day to meet an Aborigine coming back to camp carrying a large bunch of the Australian bluebell. 'How nice!' she exclaimed, 'Are those for your Mary?', and was somewhat dashed at the reply of 'No, I'm going to eat them'.

The Australian bluebell with its delicate, sky-blue flowers is one of the best known wildflowers. Although there are several species, all have the same general appearance and can be easily recognized. They are similar to the bluebells of Scotland, rather than the English species, which is quite unrelated.

Flavour of the bluebells is very mild, but the attractive appearance makes them worth using in salads; flowers wilt rather easily so it is necessary to include other moist ingredients with them.

Distribution: Some species in all States

7 *Water Sources and Beverages*

WATER

In the driest continent in the world the ability to obtain an emergency supply of water has often meant the difference between life and death for both the original inhabitants and the early explorers and settlers.

After surface water disappeared, it was sometimes possible to reach water by digging in some likely spot such as a creek bed; or a spear could be driven into mud and the water seeping into the hole sucked out through a hollow stem. Even dew could be collected in the early morning. But when these sources also were no longer available, those skilled in bushcraft could still obtain water from plants, often in remarkably dry areas.

Dew was an important source of water for the Aborigines in some arid areas. Although not, of course, produced by plants, it settles in large amounts on them. In the early morning the precious drops were tapped into a receptacle from grass or shrub, or a ball of soft grass was used as a sponge.

On his thirsty expedition from Adelaide to King George Sound in 1840–41, Edward John Eyre had exhausted the last drop of water when still about a thousand kilometres from King George Sound; with no immediate prospect of reaching water, the expedition was in desperate straits. Fortunately, during that night a heavy fall of dew gave the party a temporary reprieve allowing them to struggle sixteen kilometres further on; there, with hope almost gone, a good supply of water was finally reached by digging in the hollow between the sand ridges, 'on the seventh day of our distress, and after we had travelled one hundred and sixty miles since we had left the last water.' Eyre described his gatherings of the life-saving dew, '. . . I took a sponge, and went to try to collect some of the dew which was hanging in spangles upon the grass and shrubs; brushing these with the sponge, I squeezed it, when saturated, into a quart pot, which, in an hour's time, I filled with water. The native boys were occupied in the same way; and by using a handful of fine grass, instead of a sponge, they collected about a quart between them. Having taken the water to the camp, and made it into tea, we divided it amongst the party, and never was a meal more truly relished, although we all ate the last morsel of bread we had with us, and none knew when we might again enjoy either a drink of water, or a mouthful of bread. We had now demonstrated the practicability of collecting water from dew. . . . It was, however, very cold work, and completely wet me through from head to foot, a greater quantity of water by far having been shaken over me, from the bushes, than I was able to collect with my sponge.'

Hollow tree trunks provided valuable water reservoirs for Aborigines travelling through dry country. One of the best known of these reservoir trees was *Casuarina decaisneana*, the desert oak of dry inland areas. This tree had relatively large reservoirs, often with small entrances which reduced evaporation and the possibility of pollution. The water was extracted either by sucking it out with a hollow stem or tubes of bark, or by means of a sponge of grass attached to the end of a spear.

On some islands of the Great Barrier Reef hollows in the gnarled trunks of old specimens of *Pisonia grandis* often contain a little brown water, the only supply available on some cays. However, with the usually high numbers of seabirds nesting in the branches above, its purity leaves something to be desired. We have sampled this only accidentally while trying to extract mosquito larvae through a plastic tube, and recommend it only for emergencies.

Plants take up water through their roots, often in surprisingly large quantities, and lose most of it through their leaves. Usually, this water in transit through the plant is not easily extracted mainly because the vessels in which it travels are too narrow to allow its release. However, in the stems of some species, mainly vines, and in the roots of others, the vessels are well above average size. In these species, if the stem or root is cut across, one can quite easily see with the naked eye the small pores representing the individual vessels. These wide, and often long, vessels allow the water to escape from the cut end if short lengths of half to one metre are stood upright. Depending on the species, the water may drip out slowly or even trickle out in a continuous stream for a few seconds. Several billets placed upright in a container usually yield a useful quantity of water.

In dry country, the shallow roots of eucalypts have been the main suppliers of emergency water, although eucalypt saplings also have been used. Best known of these eucalypts are *E. dumosa* (weir mallee, bull mallee, water mallee, dumosa mallee), *E. microtheca* (coolibah), and *E. oleosa* (acorn mallee). Up to a quart of water can be obtained from eight or nine metres of root.

The availability of this water depends, to a large extent, on the occurrence of a suitable loose soil from which the root can be prised up in a long piece. In a compact soil, too much labour would have to be expended in digging.

The Aborigine could often detect the position of the roots by the presence of slight ridges or cracks above them, but failing this he dug round the base of the tree a metre or so from the trunk until a root was located. He then dug it up with a digging stick, or dragged it up as he moved along straddling the root. The billets were then drained into some container, often of bark or wallaby skin. Small amounts remaining were sometimes expelled by puffing at the upper end. Although the lengths of root could be regarded as very inefficient carrying pots for water there are records of their being carried long distances after having one end plugged with clay.

In arid regions between the Lachlan and Darling Rivers there were groups of Aborigines who were unable to visit the rivers for fear of hostile tribes along the banks, and so they had to survive for four or five months each year on water drained from roots.

Eyre became acquainted with this source of water during his journeys of exploration into arid Australia in 1840–41. His first-hand account makes interesting reading:

'Selecting a large healthy looking tree out of the gum-scrub, and growing in a hollow, or flat between two ridges, the native digs round a few feet from the trunk, to find the lateral roots; to one unaccustomed to the work, it is a difficult and laborious thing frequently to find these roots, but to the practised eye of the native, some slight inequality of the surface, or some other mark, points out to him their exact position at once, and he rarely digs in the wrong place. Upon breaking the end next to the tree, the root is lifted, and run out for twenty or thirty feet; the bark is then peeled off, and the root broken into pieces, six or eight inches long, and these again, if thick, are split into thinner pieces; they are then sucked, or shaken over a piece of bark, or stuck up together in the bark upon their ends, and water is slowly discharged from them; if shaken it comes out like a shower of very fine rain. The roots vary in diameter from one inch to three; the best are those from one to two and a half inches, and of great length. The quantity of water contained in a good root, would probably fill two-thirds of a pint. I saw my own boys get one-third of a pint out in this way in about a quarter of an hour, and they were by no means adept at the practice, having never been compelled to resort to it from necessity.'

Eyre goes on to express his admiration for the ability of the Aborigines to survive in country which, to a European, seemed so inhospitable. Later, he returns to the subject of water from mallee roots and reflects on the superiority of the Aborigine in obtaining this emergency supply: 'Another very important circumstance in favour of the native . . . is the fact, that the native sets to work to procure his supply calmly and collectedly, and before he requires it; whilst the European, even if acquainted with the method of obtaining it, would not resort to it until the last extremity, when the body was fatigued and heated by previous exertion, the mouth dry and parched by thirst, and the mind excited and anxious from apprehension.'

Nevertheless, Eyre held it 'impossible that a person, acquainted with this means of procuring water, and in a district where the gum-scrub grew, could ever perish from thirst in any moderate lapse of time, if he had with him food to eat, and was not physically incapable of exertion.'

The roots of several plants other than eucalypts were used as a source of water by Aborigines in various parts of Australia. These plants include a member of the related genus *Angophora*, and some species of *Acacia*. *Casuarina decaisneana* (desert oak) of inland localities was well known to yield good supplies. The widely distributed *Hakea leucoptera* (needle bush, silver needlewood) in one experiment 'yielded quickly, and in large drops, about a wine-glassful of really excellent water' from 2–2·5 m of 1 cm diameter root. However, apparently not all roots of this plant yielded water so readily; in the Mt Lyndhurst region of South Australia the

Leigh Ck → Hawker

Aborigines first burned down the tree in the belief that this would drive water into the roots; one end of the roots was then placed in a slow fire and the other into a container to catch the water slowly dripping out.

Both *Brachychiton rupestre* (bottle tree) and *B. populneum* (kurrajong) are known to be good water trees, and probably other members of the genus also would have roots worth tapping; it has been reported that, in some areas, the Aborigines subsisted almost wholly on water from kurrajong roots which rapidly yielded exceptionally large quantities. One report of the kurrajong stated that 'water gushes out rapidly when the pieces of root are set on end, the roots of a tree yielding gallons in quantity.'

Stems, in general, fail to yield water, or yield it less readily than roots, probably because of the usually smaller diameter of their vessels. However, *Casuarina equisetifolia* (coastal she-oak) on at least one occasion yielded useful water from stem billets. Probably the roots, which could be fairly easily extracted from the sand in which they usually grow, would be even better. Temporary relief from thirst may also be obtained from chewing young branchlets of *Casuarina*; although they contain negligible quantities of water, their acid promotes salivation.

Rainforests are areas of high rainfall, but reaching a waterhole or creek may involve a long and difficult descent down a mountainside, so travellers welcomed the ready supply available from plants. Some of the lianas or monkey vines are excellent sources of water. Usually those of about finger diameter which are fairly supple yield the best supply; the native grapes are common among these sources. Even some lawyer vines (*Calamus* spp.) and supplejack (*Flagellaria indica*) can be used.

It is better to allow the water from a water vine to drip into a container than to suck it out of the stem, as the cut bark in some species may contain substances which will irritate the mouth. If no container is available and it is necessary to suck out the water, first trim off the bark from the end to be put in the mouth. Cutting the stem of course kills the spreading mass of leafy vine scrambling out of sight over the canopy above; the interest of seeing water drip from the cut billets does not justify such destruction; however, in an emergency, other considerations may outweigh concern for the vegetation.

A small number of species contain enough water in their fleshy leaves to make it worthwhile chewing them for an emergency supply. *Carpobrotus*, with species on both coastal sand dunes and arid inland areas, has angular, fleshy leaves containing large quantities of water. Some are slightly salty and some rather astringent and unpleasant, but in an emergency could probably sustain life for a while. The naturalized *Gasoul crystallinum* (ice plant) of inland localities is recognizable by its large, glistening, water-containing cells over the surface of its fleshy leaf; on one occasion an Afghan, badly injured by his camels in arid Australia, was able to survive several days of extreme heat on the water obtained from this plant. However, under normal conditions both these plants are more acceptable to stock than to humans.

A less destructive way of obtaining water is through the solar still. This can be constructed by digging a hole about a metre across and half a metre deep. A container is placed in the bottom and the rest of the hole lined with leaves to provide a source of water. Slices of prickly pear are a good source. A sheet of plastic is placed over the hole, its edge weighted down leaving some slack. Then a stone placed in the centre will pull the plastic down to form an inverted cone with its apex just above the water container. The plastic should not touch the leaves lining the hole. Heat from the sun will vaporize water in the plant material, and drops of water will condense on the plastic and run down into the container. Moist soil, even without the addition of leaves, will give some water, and if salty water is available this can be added to the walls of the pit.

Under conditions of freshwater shortage near the sea it should be remembered that vegetables can be cooked in a mixture of approximately equal quantities of fresh and salt water. Seawater alone gives unacceptably salty results.

ALCOHOLIC BEVERAGES

Most peoples have found some way of producing alcoholic beverages. A sugary fluid obtained from various sources e.g. fruits, honey, the tapped inflorescence of a palm, even milk, is allowed to ferment. Sometimes, a special strain of yeast is added, sometimes wild yeasts reach the exposed liquid as aerial contaminants.

In mainland Australia there seems to have been little or no production of alcoholic beverages by the Aborigines, although it has been suggested that the nectar washed from flowers may sometimes have undergone slight fermentation before being drunk.

There was, in Tasmania, a good sugar source in *Eucalyptus gunnii* which came to be known by the white settlers as cider gum or cider tree. The Aborigines ground holes in the bark, and the sugary sap running down the trunk from the wound was collected at its base. Wild yeasts accomplished the fermentation. The settlers apparently were not slow to follow this example and cut holes in the trunk sufficient to hold about a pint; for a time, at least, the cavity filled daily and the sap could, if desired, be drunk immediately. It is reported that this 'cider' was in demand in the early days by both Aborigines and white men. Dr John Macpherson records that, 'At Christmas time, in 1826, the Lake Arthur blacks indulged in a great eucalyptus cider orgy.'

In the early days when hops were not always available for brewing beer, the settlers' genius for improvisation found substitutes in some local plants. Chief of these were species of *Dodonaea* (native hops). There are numerous species of this genus spread over Australia, and extending from moist coastal gullies to the dry inland. Leaves of the shrubs may be either simple or pinnate. The most characteristic feature is the dry fruit with three rather papery wings. Their appearance and bitter taste recalled to the early settlers the fruits of hops, and they were successfully tried as a hops substitute in beer making. At one time they were extensively used for this purpose.

Other species with leaves used as hops substitutes were *Daviesia latifolia* and *Acacia myrtifolia*.

TEA AND COFFEE SUBSTITUTES

A 'nice cuppa' provides the start for many a day and the stimulus for its continuation.

One of the most keenly felt privations on Ludwig Leichhardt's overland journey from Moreton Bay to Port Essington in 1844–45 was the lack of tea after provisions became exhausted. Leichhardt wrote in his diary: 'Tea is unquestionably one of the most important provisions of such an expedition: sugar is of very little consequence, and I believe that one does even better without it. We have not felt the slightest inconvenience from the want of flour; and we were a long time without salt.'

A companion on the expedition, Phillips, was so keen to obtain a coffee substitute after their tea supply was exhausted that he pounded and boiled the seeds of an *Acacia* which had been roasted by a recent bushfire. Even Leichhardt, who would try almost anything, was put off by the brew's exceptional bitterness, but Phillips nevertheless drank 'about a pint of it, which made him very sick, and produced violent vomiting and purging during the whole afternoon and night.' But Phillips was not to be deterred by a small setback like this; later on the party camped by a small pool – 'Its water was so impregnated with the astringent properties of the gum-trees, that Mr. Phillips boiled and drank it like tea.'

Neither of Phillips' beverages is likely to be tried again, but it is such experimentation which has revealed a small number of tea and coffee substitutes, most of them poor substitutes to anyone who has not been deprived of the real thing for more than a few hours.

Although it has been claimed that Aborigines boiled water in baler shells, in general they were without vessels in which water could be heated. Consequently there was no store of Aboriginal information on which the white man could draw for the making of his hot beverages.

TREES AND SHRUBS

Atherosperma moschatum SASSAFRAS, SOUTHERN SASSAFRAS

A. moschatum is a tree of rainforests and moist gullies from Tasmania to southernmost Queensland. Its aromatic, rigid leaves, the margins smooth or coarsely toothed, are grey or white on the undersurface and often tend to be arranged in one plane. The smooth grey bark contains an essential oil giving it a distinctive fragrance likened by one early author to new ale. An infusion of the bark enjoyed a reputation among the early settlers as a tonic. The bark, either dried or fresh, was used also to make a tea substitute, and, according to Ronald Gunn, one of the early naturalists of Tasmania, had a pleasant taste when taken with plenty of milk. Distribution: Qld, N.S.W., Vic., Tas.

Austromyrtus acmenioides (*Myrtus acmenioides*) SCRUB IRONWOOD

Among the numerous trees of a rainforest this is one of the few species which can be recognized immediately by the nature of its bark. The trunk is usually less than 30 cm in diameter, often slightly flanged to give it an irregular cross-section, and is remarkable for its smooth green bark with a few patches of brown. As the outer tissues die, they turn brown and are shed as twisted flakes so that the surface never becomes rough and cracked. The elliptical leaves, 4–9 cm long and drawn out at the apex into a sharp point, are reported to have been used to give an added flavour to tea in the early days. A related species, *A. fragrantissima*, has been used also.

Distribution: *A. acmenioides* – Qld
A. fragrantissima – Qld, N.S.W.

Baeckea gunniana ALPINE BAECKEA, MOUNTAIN HEATH-MYRTLE

B. gunniana is confined to alpine regions, particularly along watercourses, where it forms a low or even prostrate densely branched shrub. Its small leaves, 2–4 mm long and concave on the upper surface, were once used as a tea substitute.
Distribution: N.S.W., Vic., Tas.

Baeckea virgata

Encouraged by the reported use of *B. gunniana* as tea we have tried the widespread *B. virgata*, a taller shrub with some specimens reaching to 6 m. It produces a pleasant drink with a good aroma similar to that of *Leptospermum*.
Distribution: Qld, N.S.W., Vic., N.T.

Brachychiton populneum KURRAJONG

The kurrajong has a round, even trunk, a little like that of the related bottle tree but without the enormous swelling of that species. Its leaves with a long tapering point are sometimes three-lobed. The use of its seeds as a coffee substitute has been well known in Australia. They require light roasting followed by pounding or grinding and brief boiling; rather more material of kurrajong than of coffee is necessary to make a reasonable drink. Leichhardt found that the seeds 'produced not only a good

beverage with an agreeable flavour, but ate well and appeared to be very nourishing.' Seeds of all the species of *Brachychiton* can probably be used in the same way. (See also pp. 81, 138.)
Distribution: Qld, N.S.W., N.T.

Correa alba NATIVE FUCHSIA, CAPE BARREN TEA, WHITE CORREA

This coastal shrub bears attractive, white, bell-shaped flowers with four petals. The lower surface of the opposite leaves is covered with fine grey or rusty hairs; translucent oil dots can be seen with a lens if the leaf is held up against a strong light. The leaves were once used as a tea substitute, particularly by sealers on islands in Bass Strait.
Distribution: N.S.W., Vic., S.A., Tas.

Doryphora sassafras SASSAFRAS, CANARY SASSAFRAS, YELLOW SASSAFRAS

Rather like *Atherosperma moschatum*, and also known as sassafras, but without the pale undersurface to the leaf, this is a common tree in coastal rainforests from the Queensland border to southern New South Wales. Its bark was used as a tea substitute and tonic, and was stated to be not unpleasant but to require some practice really to appreciate. Since the bark contains a poisonous alkaloid doryphorine, it probably should be used with some caution.
Distribution: Qld, N.S.W.

Kunzea muelleri YELLOW KUNZEA

This small shrub, usually not over 30 cm high and bearing yellow flowers, is confined to alpine regions of New South Wales and Victoria. Its slender, more or less cylindrical leaves have been used as a tea substitute, but nothing seems to be recorded of its quality.
Distribution: N.S.W., Vic.

Leptospermum TEA-TREE

The name tea-tree is applied to members of the genera *Leptospermum* and *Melaleuca* because of their use, during the early days of white settlement of Australia, as substitutes for China tea which was expensive and often unprocurable. The spelling 'ti-tree' for these plants is incorrect. It is commonly thought that *Leptospermum* was used by Captain Cook's men to make a substitute tea in Australia; it was certainly used extensively during the first year of settlement at Sydney Cove.

There are numerous species of *Leptospermum* in Australia and probably any of them could be used, with varying degrees of acceptance, to make a hot drink. We have tried tea made from *L. flavescens* and *L. petersonii* (lemon-scented tea-tree). Both were strongly aromatic but pleasantly acceptable if one was not expecting something closely resembling conventional tea. With a little persistence, one could probably become fond of tea-tree tea.

A few leaves of *L. petersonii* added to the pot when making normal tea produce a refreshing variation.

Distribution: Some species in all States

*Leucaena leucocephala** (*L. glauca*)

In some countries, the flattened, brown seeds of this small tree or shrub with the general appearance of a wattle have been roasted and used as a coffee substitute. (See also p. 108.)

Distribution: Qld, N.S.W.

Ocimum sanctum SACRED BALM

The large family Labiatae is notable for the volatile oils its members contain, and several culinary herbs such as mint, thyme, sage, marjoram and rosemary owe their importance to these oils. Some need only a touch to release their oil and scent the fingers. Although the family is well represented in Australia, it has been neglected as a source of flavouring. An exception is *O. sanctum* of inland localities, a close relative of basil. It is a small, hairy shrub, often only 30 cm high, with purple or white flowers in whorls of six. The Aborigines regarded it as a medicinal plant, crushing the leaves in water and drinking the solution for fevers. However, the early settlers dried the leaves and made 'bush tea' out of it.

Although there can be no certainty of its identity at this stage, it seems likely that this was the plant which Ludwig Leichhardt termed wild marjoram and appreciated on his journey to Port Essington: 'In the vicinities of several of the camps, Charley found many nests of the native bee, full of the sweetest and most aromatic honey we had ever tasted. The wild marjoram, which grows abundantly here, and imparts its fragrance even to the air,

seemed to be the principal source from which the bee obtained its honey. We collected a considerable quantity of the Marjoram, and added it to our tea, with the double intention, of improving its flavour, and of saving our stock; we also used it frequently as a condiment in our soup.'
Distribution: Qld, N.T.

CLIMBERS AND SCRAMBLERS

Canavalia maritima (*C. rosea*) MACKENZIE BEAN, FIRE BEAN

One of the native beans, this trailing plant with trifoliate leaves and purple flowers is probably best known as an important member of the coastal sand-dune community of tropical and subtropical eastern Australia. However, it has also a wide distribution in inland areas. It was one of the numerous plants sampled by Leichhardt on his journey to Port Essington: 'we roasted and ate some of its fruit; it was, however, too heavy, and produced indigestion: Mr. Phillips pounded them, and they made an excellent substitute for coffee, which I preferred to our tea, which, at that time, was not very remarkable for its strength.' Later on, he recorded that they enjoyed this coffee 'even to the grounds themselves.' (See also p. 94.)
Distribution: Qld, N.S.W., N.T.

Hardenbergia violacea PURPLE CORAL-PEA, SARSAPARILLA, FALSE SARSAPARILLA

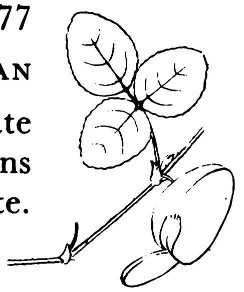
Hardenbergia violacea is a widespread species often forming brilliant displays of purple peaflowers on stony outcrops and roadside cuttings. The plants are usually trailing, but occasionally twine up some support.

This species has frequently gone under the common name of sarsaparilla, but is in no way related to the true sarsaparilla. At one time its roots and leaves were used to make a tonic drink, but this use was probably based on the misapplied common name rather than any particular virtue it possesses. We have tried boiling the leaves, and find that the drink produced is slightly sweet and reasonably pleasant.
Distribution: Qld, N.S.W., Vic., Tas.

PLATE 7
1 *Pterocladia lucida* *p. 195*
2 Sea-string *p. 192*
3 Laver *p. 194*
4 *Griffithsia tenuis* *p. 193*
5 Sea lettuce *p. 196*
6 *Sargassum vestitum* *p. 195*
7 *Sargassum linearifolium* *p. 195*
8 *Hypnea episcopalis* *p. 193*
9 *Dictyopteris acrostichoides* *p. 191*
10 Sea grapes *p. 190*

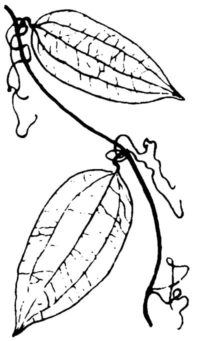
Kennedya prostrata RUNNING POSTMAN

Scarlet, pea-like flowers 2–2·5 cm long are borne on this prostrate or twining creeper. The trifoliate leaves with undulate margins were used as a tea substitute and were said to have a pleasant taste.
Distribution: All States



Smilax glyciphylla NATIVE SARSAPARILLA

In the hard times during early settlement of New South Wales native sarsaparilla was one of many plants that were tried as substitutes for products in short supply. Perhaps it would be better classed as a medicinal than as an edible plant since its leaves were widely used to produce a bitter-sweet tea which was reputedly a good tonic and effective in the prevention of scurvy. It is a scrambling or climbing plant of moist eucalypt country and can be recognized by the pale undersurface to the leaf with three prominent veins, coupled with the presence of a pair of tendrils on the leaf stalk.
Distribution: Qld, N.S.W.



HERBS AND GRASSES

Acaena anserinifolia BIDGEE-WIDGEE, BUZZY

A. anserinifolia is a plant with long, wiry, more or less prostrate stems arising from a woody root-stock. Its small pinnate leaves, with three to four pairs of deeply toothed leaflets, form a sheath on the stem at its base. Although a member of the rose family, its blooms are inconspicuous, and the head of small flowers is followed by a burr-like fruit with numerous, protruding bristles each with a finely barbed head. Once it was used as a tea substitute; we have found the drink it yields reminiscent of tea, but tea made from rather stale leaves.

The long stems can easily be stripped of their leaves by running them through the fingers. Considerably more of the leaves are required than in the case of tea.
Distribution: Qld, N.S.W., Vic., S.A., Tas.

PLATE 8
1 Parasol mushroom *p. 203*,
2 Coral fungus *p. 205*
3 Field mushroom *p. 198*
4 Beech fungus *p. 202*
5 Morel *p. 204*
6 Ink cap *p. 201*

*Anthoxanthum odoratum** SWEET VERNAL-GRASS

A native of temperate Asia and Europe, this tufted, perennial grass is now widely naturalized in Australia, particularly in cooler areas. When crushed or when drying it gives off a pleasant fragrance, and it is claimed that a drink resembling tea can be made from its leaves.
Distribution: All States

*Cichorium intybus** CHICORY

Roots of chicory, roasted and ground, have been used widely as a substitute and adulterant for coffee, and are cultivated commercially for this purpose. Some people regard its addition to coffee as an improvement. (See also p. 118.)
Distribution: All States

also at Bees-wax.

Euphorbia hirta ASTHMA PLANT

Asthma plant is a spreading to semi-prostrate herb with opposed leaves 1·5–3·5 cm long and often reddish brown. *E. hirta* is well known to many gardeners in New South Wales and Queensland as a minor garden weed.

This plant is less appropriately included in this list than some of the others since, although it is used as tea, it is drunk chiefly because of its reputation for giving relief from asthma. The Colonial Botanist of Queensland, F. M. Bailey, writing of this plant in 1888 under the name *E. pilulifera*, stated that it 'is constantly used in the form of a tea by persons suffering from asthma, and is said to give instant relief. For this purpose the whole plant is gathered while in flower and fruit and most carefully dried, for if allowed to mould it is apt to do more harm than good. The tea should be of the same strength as ordinary tea, and a wineglassful for a dose.'
Distribution: Qld, N.S.W.

*Helianthus annuus** SUNFLOWER

Sunflower seeds, as well as being very pleasant to eat raw, may be used as a coffee substitute. The seeds should be roasted to a dark brown before grinding. As with 'real' coffee, the substitute produces a better brew when roasted and ground freshly before

using. More of the grounds are needed per cup than for coffee. (See also pp. 97, 162.)
Distribution: Qld, N.S.W., S.A.

Nelumbo nucifera (*Nelumbium speciosum*) SACRED LOTUS, LOTUS

The seeds of this water-lily are borne, each in its own depression, in the receptacle which has the shape of a spinning-top. Leichhardt found that the seeds 'when roasted and pounded, made a most excellent substitute for coffee'. (See also pp. 98, 125.)
Distribution: Qld, N.T.

*Taraxacum officinale** DANDELION

Roots of the dandelion can be used, like those of chicory, as a coffee substitute. The roots are dried, roasted and ground, and may be used either alone or as an adulterant for coffee. The brewed drink is said to be palatable, very like real coffee, but rather bitter. (See also pp. 131, 154.)
Distribution: All States

OTHER BEVERAGES

Several other species may be used to provide beverages which cannot be classed as substitutes for tea or coffee. We have listed among this group the crow's apple, whose fruits have been boiled to make a drink. This method could, of course, be employed for almost any of the native fruits; it is useful particularly for those which have little flesh, or where the fruit is excessively fibrous or sour.

*Cocos nucifera** COCONUT

Young coconut fruits contain considerable quantities of a clear, refreshing liquid, the so-called coconut milk. In Australia, most people trying to get at this unfamiliar drink spill as much as they gain in opening the nut. However, in some countries such as Malaysia, where the fruit is an everyday item of commerce, the husks of green coconuts are trimmed to produce a form like a round hut with a conical roof. On being selected by a customer, the nut is expertly 'decapitated' and a drinking straw inserted through the hole.

Although the coconut is best known for the oily flesh lining the hard shell, there are some tropical countries where it is common practice to tap the young inflorescence to obtain a flow of sugary sap. If the complex operation is done by a skilled worker and the inflorescence suitably prepared before tapping, a tree may yield in excess of a litre a day, and about 400 litres per year. The juice can be boiled to produce an unrefined sugar, jaggery, or may be fermented to yield toddy. Distillation of toddy gives arrack. (See also p. 26.)
Distribution: Qld, N.T.

Mimusops parvifolia

A tropical coastal tree, this species is closely related to *M. elengi* (see p. 42) and bears similar but less tapered fruit. Few people would think to taste the milky latex exuding from a wounded branch, but there is a report that 'This tree yields a thick milky sap, that tastes like fresh cream.' Since the bark of some species of the genus contains toxic alkaloids or saponins, a glass of *Mimusops* milk would seem to be something to be approached with caution.
Distribution: Qld, N.T.

Owenia venosa CROW'S-APPLE, SOUR PLUM

Related to the emu apple, this tree belongs to the drier rainforests and is distinguished by its broader leaflets 1–2 cm broad. Its hard red fruit resembles that of the emu apple and it is reported that it can be boiled to produce a beverage.
Distribution: Qld, N.S.W.

NECTAR

Nectar is a solution of various sugars produced by glands in the lower part of the flower. The quantity and concentration produced varies considerably, not only from species to species but also within the one species from one locality to another, from year to year and even from time to time within one day. In most flowers, nectar is available only to those insects, birds and mammals, including bats and pygmy possums, which are adapted to collecting this type of food; usually man must wait for his portion until bees have gathered it and reduced the water content to roughly 10% to produce honey. However, there are a few species in which nectar is produced in such large quantities that it is available directly to man. However, today, such sources of nectar provide only a pleasing diversion rather than a useful part of the diet as they did for the Aborigines.

Acrotriche prostrata TRAILING GROUND-BERRY

One of the heaths, this slender trailing shrub with hairy, broadly dagger-shaped leaves, their margins slightly upcurved, is found in the moister forests of Victoria. Dense clusters of greenish flowers are borne on the old wood. The five spreading petals are tipped with hairs, but their lower parts are united to form an inflated 'honey pot' containing abundant nectar which is sucked out by children.
Distribution: Vic.

Banksia

Banksias, with their rigid 'bottle-brush' flowering spikes, are well-known trees and shrubs in most areas of coastal Australia. Many of the species are good sources of nectar, and the Aborigines used to

suck the fluid direct from the flowers or wash it out with water. However, it is reported that one man who had frequently sucked *Banksia* flowers to alleviate thirst in dry areas invariably suffered headache and a feeling of nausea after doing so.
Distribution: Some species in all States

Bauhinia carronii

Two-lobed 'butterfly' leaves characterize the bauhinias. This handsome, deciduous tree of the inland bears attractive white flowers which secrete considerable quantities of nectar. The Aborigines sucked the nectar directly from the flower or washed it out with water.

B. hookeri, also from the inland, was treated similarly.

Distribution: *B. carronii* – Qld, N.S.W.
B. hookeri – Qld, N.T.

Eucalyptus GUM TREE

Many of the eucalypts produce considerable quantities of nectar but it is not so easily sucked from the flowers as it is with some of the Proteaceae. In some species, notably the bloodwoods such as *E. gummifera* and *E. intermedia*, flowers are borne in large terminal clusters, and it is eucalypts of this type which are the ones easiest to exploit for nectar. The Aborigines are known to have sucked the nectar from these gum trees but, when we have tried it, we have ended up with a mouthful of loose stamens and not much nectar.

Sir Thomas Mitchell found that Aborigines in Victoria made a sweet drink called 'bool' by steeping the flowers of an ironbark in water. We have tried this with bloodwood but the resulting drink was too mild to be enjoyable, although it would no doubt be acceptable in a case of real need.

Distribution: *E. gummifera* – Qld, N.S.W., Vic.
E. intermedia – Qld, N.S.W.

Grevillea robusta SILKY OAK

Among the family Proteaceae there are some outstanding nectar producers which are visited by large numbers of honeyeaters and nectar-seeking parrots. One of the richest sources of nectar is the silky oak which, in early summer, produces masses of golden flowers in brush-like clusters, the flowers all directed upwards and each containing a drop of nectar in its dark throat. Slight disturbance of a branch is sufficient to bring down a rain-like shower of the sticky fluid but, with some care, it is possible to suck considerable quantities of nectar from the brushes of flowers. Of course, if the object is to collect enough nectar to provide sustenance, it is better to shake it out into a dish or wash it out in a small quantity of water.

Several other species of *Grevillea* also are rich in nectar, as are members of a number of related genera; these include *Banksia*, *Lambertia*, *Hakea*, *Telopea* and *Lomatia*. However, it is advisable to avoid *Lomatia silaifolia* as there are reports that flies visiting the flowers are killed, probably by the prussic acid present.
Distribution: *G. robusta* – Qld, N.S.W.

Melaleuca TEA-TREE

On his expedition to Port Essington, Ludwig Leichhardt encountered the Aboriginal practice of soaking nectar-rich blossoms in water to produce a sweet drink. He wrote in his journal as follows: 'We gathered some blossoms of the drooping tea-tree, which were full of honey, and, when soaked, imparted a very agreeable sweetness to the water. We frequently observed great quantities of washed blossoms of this tree in the deserted camps of the natives; showing that they were as fond of the honey in the blossoms of the tea-tree as the natives of the east coast are of that of the several species of Banksia.'
Distribution: Some species in all States

Melichrus procumbens HONEY POTS, JAM TARTS

This member of the heath family is a low, sprawling shrub with crowded leaves gradually tapering to a fine point. Its flowers are largely hidden from sight on the undersides of the branches, but they contain so much nectar they are worth searching for.
Distribution: Qld, N.S.W.

Telopea speciosissima WARATAH

Found only in New South Wales, this shrub with its handsome dome of red flowers well deserves its place as a State floral emblem. Like several other members of the family Proteaceae, it produces copious quantities of nectar and this was exploited by the Aborigines. Distribution: N.S.W.

Xanthorrhoea GRASSTREE, BLACKBOY

Most people know well these typically Australian plants with their crown of narrow leaves and tall, unbranched flowering spike of small white flowers. As with other rich producers of nectar, these plants are well attended by a variety of nectar-seeking birds. Each flower produces a large, glistening drop of nectar, and if one can get there before the birds, these drops can be licked from the spike. The Aborigines are reported to have soaked the flowers to produce a sweet drink. (See also p. 112.)
Distribution: Some species in all States

GUMS

Gums are carbohydrates which exude from the bark of various species, usually following some injury, often insect attack. The gum appears first as a glistening, sticky globule which may grow in size to reach several centimetres in diameter, or may flow slowly down the trunk forming an almost immobile cascade. As the gum dries out it becomes brittle and, in some cases, there is a surface crazing which destroys its beautiful transparency.

Species from numerous genera produce gums in varying quantities, and it is likely that many of them are edible. However, only a small number of genera are on record as having edible gum.

Resins, such as those produced by the Australian cypress pines, may have the same general appearance as gums, but they do not soften or dissolve in water, and are of no use as food.

Acacia WATTLE

Wattles are among the most prolific producers of gum. Products such as gum arabic, from non-Australian species, have been used extensively in the preparation of adhesives, but the gums from Australian species, on the whole, are of poor quality for this purpose; when soaked in water, many of them tend to form a jelly rather than having the flowing, mucilaginous consistency desirable for adhesives. However, this quality does not affect their use as food.

The gum can be sucked, or it may be soaked for a few hours in a small quantity of water and the resulting jelly eaten. There is little flavour to the gum unless it contains tannin, when it may be too

bitter and astringent to eat. The pale amber gums are more likely to be palatable than those with a deep, red-brown colour.
Distribution: Some species in all States

Brachychiton rupestre BOTTLE TREE, NARROW-LEAVED BOTTLE TREE

The bottle tree with its remarkably swollen trunk is a conspicuous tree in the Brigalow country of subcoastal Queensland. A great deal of this country has now been cleared for grazing, but in some areas many fine specimens of bottle tree have been saved when the surrounding vegetation was destroyed.

The mucilaginous exudate from wounds in the trunk was eaten by Aborigines. White men also have welcomed the food provided by the bottle tree. On his journey of exploration in 1846 Major Mitchell found that 'When boiling water is poured over shavings of this wood a clear jelly, resembling tragacanth is formed and becomes a thick viscid mass'. (Tragacanth is a gum formerly used for various purposes, including holding dental plates firmly in the mouth.) Later, on the same expedition, he wrote: 'The wood must contain a great portion of mucilage, for, on chewing it, it seems to contain as much nutritious matter, as fibre.' Leichhardt was another explorer happy to use this tree, and wrote that the young wood, 'Containing a great quantity of starch between its woody fibres, was frequently chewed by our party.'

Soft bottle tree trunks have also been a valuable drought fodder for cattle. F. M. Bailey, the Colonial Botanist for Queensland, wrote that 'cattle do well on this food, and are exceedingly fond of it; indeed it is said that they even eagerly gather up the chips as they fly from the axe.' (See also pp. 105, 138, 169.)
Distribution: Qld

Pittosporum phillyreoides WEEPING PITTOSPORUM

The pendulous branchlets give a somewhat willow-like appearance to this small tree in the drier areas. It is reputed to yield a good edible gum. (See also p. 91.)
Distribution: All mainland States

Terminalia

As a food plant, *Terminalia* is best known for the kernel of *T. catappa*. However, some species produce also an edible gum.

Leichhardt made three references in his journal to eating the gum from a species whose identity is uncertain. One of them reads, 'We collected a great quantity of Terminalia gum, and prepared it in different ways to render it more palatable. The natives, whose tracks we saw everywhere in the scrub, with frequent marks where they had collected gum – seemed to roast it. It dissolved with difficulty in water: added to gelatine soup, it was a great improvement; . . . But it acted as a good lenient purgative on all of us.' (See also p. 93.)
Distribution: Qld, N.T.

MANNA AND LERP

Some insects feeding on leaves and twigs produce considerable quantities of exudate, which sometimes falls in such large amounts that a tree appears to be raining. In other cases the exudate contains a considerable concentration of sugar extracted from the plant. Irregular, whitish, sugary deposits left on the leaf surface by evaporation of this exudate are generally termed manna. With some species of these insects the sugary solution, together with starch-like material, is used by the larva to form a cap-like structure under which it lives; such deposits have been termed lerp.

Both these products were very popular with the Aborigines and, in some areas, formed an important part of the diet for limited periods.

Although only indirectly products of the plants, manna and lerp are included here with the plants since they are so intimately associated with particular species, and indeed will be found by looking for the plant host rather than for the insect.

Dichanthium annulatum (*Andropogon annulatus*) BLUEGRASS

It seems to be unusual to find manna on grasses, but there is a record of its occurrence in large quantities on a bluegrass in northern Queensland. This manna was produced from the stems, forming whitish nodules up to the size of a marble or the top of a man's thumb. It was present in such an amount that sheep searched it out, and it was estimated that a bushel of manna could be gathered in an hour.
Distribution: Qld, N.T.

Eucalyptus GUM TREE

Various species of *Eucalyptus* are the best known producers of manna and lerp. One early report suggested that up to nine kilograms of manna could be obtained from a single tree. The Aborigines collected the fallen flakes from the ground or scraped the material off the leaf. They were also reported to have pounded heavily covered leaves and baked them. Possibly the best source of manna is *E. viminalis*, but other producers are *E. corymbosa*, *E. mannifera*, *E. pulverulenta*, *E. punctata*, *E. rubida* and *E. terminalis*.

Lerp also was produced in large amounts on some trees. According to an early report by Beveridge the lerp was produced in such quantity that an Aborigine could collect eighteen to twenty-three kilograms in a day. Beveridge further stated that 'Should the *laarp* harvest extend over six weeks, which it frequently does, the Aborigines become quite fat and sleek, although they partake of very little other food all the time, this demonstrating how very great the nutriment must be which this saccharine substance contains.'

Distribution: *Eucalyptus* represented in all States

Myoporum platycarpum SUGARWOOD

Sugarwood is a small tree of the dry country. Its slender branchlets, sometimes drooping, bear clusters of small white flowers in groups in the axils of the often slightly sticky leaves. A whitish manna exudes from the trunk at wounds made by an insect larva and was said to form stalactites up to half a kilogram in weight. This exudate consists mainly of the sweet crystalline alcohol mannitol. It was popular among the Aborigines, and the white man also quickly acquired a taste for it.

Distribution: Qld, N.S.W., Vic., S.A.

Other species

Manna has been reported also on *Leptospermum scoparium* and *Olea paniculata*.

SALT

Aegiceras corniculatum RIVER MANGROVE

Salt is not a food but often a very desirable addition to it. A ready source of salt in some coastal areas is the river mangrove. This shrub takes up salt through its roots and excretes it through glands on the upper leaf surface. Here the solution evaporates leaving spangled deposits of salt crystals. It would be a simple matter to collect one's emergency requirements from this source. Except after rain, the deposits are often so obvious that they can be used as a guide to the identity of this mangrove.
Distribution: Qld, N.S.W., N.T.

9 Algae

ALGAE COMPRISE the seaweeds, the green slimes of fresh water, and a few other plants. The group does not hold an honoured place in Australia as a source of food. Yet, in some countries, particularly in the past, seaweeds have been widely used by coastal dwellers. In Hawaii about seventy-five different species entered into the diet at one time. Even today, seaweeds are important food plants in Japan, where large areas are actually set aside for the cultivation of algae.

There is hardly any information on the use of seaweeds by the Aborigines, and it is difficult to tell now whether this source of food was neglected or whether its use was not recorded in the early days. Use of seaweed directly for food by white men in Australia seems to have been on a very small scale. One of the few published references to such use is to the effect that 'Ladies in Western Australia make jellies of *Eucheuma*, and ladies in Tasmania make jellies of *Gracilaria*, jellies much appreciated at their tables.'

There has been some commercial exploitation of seaweeds in Australia for different products. Red seaweeds are the source of agar, used extensively in the preparation of microbial culture media and in some meat canning. During the Second World War Australia's imported supply was suddenly cut off and local substitutes had to be found. In Western Australia *Eucheuma speciosum*, washed up on the beach, was collected by children and processed for use by a local meat canning firm. In eastern Australia, *Gracilaria verrucosa* was harvested from various bays and estuaries, and used for the preparation of a satisfactory agar. More recently the giant brown alga, *Macrocystis pyrifera*, has been harvested on the east coast of Tasmania for extraction of the sodium alginate used widely as a stabilizing agent in various foodstuffs including some icecreams.

A few seaweeds have entered into medicine, mainly in the past, but kelp pills, manufactured from brown algae and used mainly as a source of some minerals and vitamins, are still sold. Some brown algae have a relatively high iodine content, and for this reason were once used in the treatment and prevention of goitre. At one time, in New Zealand, when the incidence of goitre was high, a schoolteacher claimed to have reduced appreciably the incidence of goitre in his school by inducing the children to eat, each day, a 'bead' of the well-known alga *Hormosira banksii.*

There are not many seaweeds which can give real pleasure when eaten raw on the shore. However, there is a considerable variety of flavours available among them, and many could probably be used chopped, either raw or cooked, and added in small quantities to give greater interest to salads and stews. We know of some species which can be used in this way, and a little trial and error testing would reveal others.

Catenella nipae

There are several algae characteristically associated with mangroves, growing in shaggy masses on the cobbler's-peg roots sticking up from the mud, or forming dark 'socks' on the bases of the trunks. One of these is *Catenella nipae.* Although it belongs to the group known as the red algae, its colour is usually dark olive to olive-purple. Slender branches loop over the trunk or roots and produce erect, fleshy branches, usually only 2–4 cm long, marked here and there by constrictions.

In India and Burma this alga has been on sale in a dried condition for food. We have boiled and eaten *Catenella* from Australian mangroves, but it retained a rubbery texture and had little flavour. Distribution: Qld, N.S.W., N.T.

Caulerpa racemosa SEA GRAPES

All species of *Caulerpa* have a creeping stem which, at intervals, produces erect green branches which vary enormously in form from species to species. In some tropical areas *Caulerpa* has been used for food, and in the Philippines today *C. racemosa* is cultivated as a popular salad vegetable. This species, common in the warmer parts of Australia, has the erect branches with closely placed, club-shaped side branches. In small quantities, it is interesting to nibble on the shore, but is better mixed with other food. It should normally be eaten as soon as possible after collection as it deteriorates quickly once picked; however, in some areas it has been preserved in salt. In the Philippines the alga is always eaten raw. Sometimes it is dipped briefly in vinegar and eaten, or it may be mixed with tomatoes and onions as a salad.

This alga shows considerable variation in form and some in flavour. Any plants with a distinct peppery taste should be avoided as they may be poisonous. There are a number of other species of *Caulerpa* also which have been used as food.
Distribution: Qld, N.S.W., W.A., N.T.

Dictyopteris acrostichoides

Fairly easily recognizable, this brown alga has the form of a repeatedly forked ribbon, about 1 cm wide, with a distinct midrib. Chewed on the shore, it has a pungent flavour, too strong to be pleasant; but if it is boiled for a few minutes, chopped, and mixed in small quantity with potato salad, it adds an unusual and acceptable flavour.
Distribution: Qld, N.S.W., Vic., Tas.

Durvillea potatorum (*Sarcophycus potatorum*) BULL KELP

A wild, rocky shore lashed by the wave-tossed fronds of the great bull kelp is an impressive sight. The robust stalk, sometimes as thick as a man's forearm, expands into a heavy, leathery blade which, in turn, divides into numerous tapering thongs. Plants commonly reach 4 m long, and a single plant is as much as one man would want to carry.

There is a very early report that the Aborigines of Tasmania used the plant as food when other supplies were scarce, but the method of preparation seems to be unknown. Another use to which the Aborigines put this seaweed was in making pouches for holding fresh water. The *potatorum* part of its name is derived from this use, and not because of any connection with potatoes.
Distribution: N.S.W., Vic., Tas., S.A.

Enteromorpha GREEN GUTS

A close relative of the sea lettuce (see p. 196) is *Enteromorpha.* Its species have the form of a sparsely or richly branched tube, mostly 1–10 mm thick and 1–30 cm or more long. It is common on some intertidal rocky shores, forming splashes of bright green particularly on sand-embedded boulders and where fresh water from drains or natural seepages flows down to the sea; in some brackish lakes this alga occurs in extensive floating masses.

Enteromorpha has been used in the same way as *Ulva*. The so-called 'moss' used by fishermen as bait for black bream is an *Enteromorpha*.
Distribution: All States

Eucheuma

The species of *Eucheuma* have a tough, gristly consistency, and usually bear numerous spiny or knobbly short appendages along the thick main branches. *E. speciosum* is the species which was used in Western Australia during World War II in meat canning; the early colonists used it for the preparation of milk jellies.

Apart from this species, the genus in Australia is mainly limited to tropical regions.
Distribution: Qld, W.A., N.T.

Gracilaria SEA STRING, CHINESE MOSS

There are several species of *Gracilaria* in Australia, most of them inhabitants of bays and estuaries rather than of wave-beaten shores. Some are found on rocky shores, others are commonly attached to pebbles and shells on sandy floors. The plants are much branched, the branches either cylindrical or flattened. Tall plants from some bays may reach 2 m in length. Many seaweeds are difficult to identify without microscopic examination and there are other algae which, superficially, resemble *Gracilaria*. However, the seaweeds are a very innocuous group, and a mistake in identifying a seaweed to be eaten is unlikely to have any serious consequences.

Gracilaria can be eaten raw in salads or after boiling, but it is perhaps more often used for the preparation of jellies. Always wash the seaweed well in fresh water, removing all marine animals attached to it. Then bleach the material by leaving it in the sun, either hanging on a wire or spread on the lawn, for about a week. Turn it a couple of times so that all parts become exposed. If the plants are not given this preliminary treatment the resulting product is likely to have an unattractive oyster-soup colour, and rather more of a marine flavour than is desirable.

To make milk jelly, simmer a handful of chopped weed in a pint of milk for about half an hour. Strain off the algae, and add sugar and other flavourings such as nutmeg to taste. Of course, water rather than milk can be used, but extra flavouring will be needed to make a palatable product.

Since different species vary in the strength of the jelly they produce, there is room for some trial and error in making these seaweed delicacies.

Should anyone living inland develop a taste for *Gracilaria* jelly, it is quite in order to take home a dried supply of the alga and to soak small quantities as required.
Distribution: All States

Griffithsia

A small number of species of this genus occur in Australia. They form strings of glistening, pink, bead-like cells up to 2 mm broad. These algae hardly provide food as there is not much more to them than a salty fluid; their attraction lies rather in the pleasant sensation produced by snapping the turgid cells between the teeth.
Distribution: All States

Hypnea

Hypnea is closely related to *Gracilaria* but most of its species can be distinguished from those of *Gracilaria* by the presence of numerous, short, often spine-like branches along the main axes. They can be used in the same way as *Gracilaria*, but a similar quantity may produce a weaker jelly.
Distribution: All States.

Nostoc commune

This is a member of the primitive blue-green algae. Most species of *Nostoc* are freshwater plants which form olive-green, gelatinous colonies, some of about the size and consistency of a grain of cooked sago. One species found away from permanent water is *N. commune*, which occurs on soil exposed to full sunlight and sparsely covered with other vegetation. After wet weather, it forms irregular, leathery-gelatinous sheets several centimetres broad, but gradually it dries out to form hard, twisted, black fragments which readily regain their gelatinous texture on wetting.

In China, Japan, Java and South America this alga has been known as an item of food, eaten either raw or cooked. We find its raw flavour very mild and not unpleasant; to a hungry man it would probably be most welcome.

During their period in the wilderness, the Children of Israel were sustained on some occasions by manna; it has been suggested that one of these mannas was *Nostoc commune* or a closely related species.
Distribution: All States

Porphyra LAVER

Among the red algae, *Porphyra* can be regarded as the counterpart of the green alga *Ulva*. It forms delicate, membranous sheets, usually olive to purple in colour. Some species occur on rocky shores in the upper part of the intertidal region where they become desiccated between high tides.

In Britain, *Porphyra* was at one time widely eaten in coastal districts, and in a few parts of south Wales has survived up to the present day as an article in local markets. After it has been washed and soaked in fresh water for a couple of hours there are different ways of treating it; the sheets may be lightly boiled then served cold with a dash of salad oil and lemon juice; or the boiled material can be mixed with oatmeal and fried as flat cakes; or the washed material can be fried with plenty of fat. We have eaten it fried alone and fried with oatmeal, and find it pleasant and unusual.

In Japan, where it is known as 'nori', *Porphyra* is an important item of food, and considerable areas are devoted to its cultivation; formerly, bundles of twiggy branches were placed in suitable positions in the sea for the plants to grow upon, but now they have been mainly replaced by nets. Many thousands of tons of wet weed are collected annually. Harvested plants are dried on bamboo mats, and end up looking like thick sheets of mottled, purple-brown paper, in which form they are sold. Before eating, the sheets are often toasted, then added to soups and stews, or cooked with rice. The purplish flecks in some imported rice savouries in Australia are fragments of *Porphyra*.
Distribution: All States

Pterocladia

One of the well-known species in this genus is *Pterocladia capillacea* which is found in Queensland and New South Wales, often on the most wave-beaten, rocky shores. It is a much-divided plant, frequently about 15 cm high, with some resemblance to a finely divided fern frond except for the pink colour. Another species, rather coarser and less finely divided, is *P. lucida*, occurring from New South Wales to Western Australia.

Pterocladia is one of the genera from which high quality agar can be prepared. For home use, the plants can be used in the same way as *Gracilaria*, although they may need rather more boiling.

There is a closely related genus, *Gelidium*, some of whose species are difficult to distinguish, in the field, from those of *Pterocladia*. They also can be used in the same way.
Distribution: Some species in all States

Sargassum

Among the seaweeds, *Sargassum* bears the greatest resemblance to a flowering plant. It has branched stems bearing brown leaves and, usually, also small round floats which buoy the plant in an erect position when submerged.

Sargassum has been eaten in various areas such as India, Japan and southeast Asia. Sometimes the young tips are eaten raw with a little lemon juice or vinegar, or the plant may be cooked. We have nibbled plants on the shore and tried one species after cooking, but so far regard them as rather unpalatable. However, there are numerous species of the genus in Australia, and some may be better than others; also they would be probably much better as an embellishment rather than as the sole ingredient of a dish.
Distribution: All States

Spirogyra

In quiet, fresh water *Spirogyra* is one of the commonest algae visible to the naked eye. Almost everyone who has studied biology, even at an elementary level, will have examined *Spirogyra* through a microscope and admired the green, spiral chloroplasts to which it owes its name. The mass of bright green threads can often be recognised as *Spirogyra* by their extreme slipperiness.

We think this alga is a thing of great beauty, but this is not a widely shared view, and we do not anticipate that a 'green slime' will become widely used as food in Australia. Nevertheless, in India and southeast Asia it has been used as such, and packets of dried *Spirogyra* have been on sale in the markets there. We have tried eating the fresh alga after draining away excess water but, although there is no unpleasant flavour, we find nothing much to commend it. Distribution: All States

Ulva lactuca SEA LETTUCE

Sea lettuce is a seaweed with an almost world-wide distribution on intertidal rocky shores. At least in subtropical areas, it is much better developed in winter than in summer. The plants are membranous, green sheets, generally up to about 15 cm long, although some plants from calm water reach greater sizes.

In Europe, Japan and Hawaii this alga has been used in the past, mainly raw as a salad vegetable but sometimes also in soups. We have tried it both raw and boiled. In spite of being only two cells thick, it is surprisingly tough, even after cooking, and has a fairly strong marine flavour. A Frenchman who prepared an *Ulva* salad wrote that 'it was leathery and waxy in taste, and in spite of a good digestion I thought I would be ill.' We don't think it was as bad as that! Distribution: All States

Other algae

There are many other seaweed genera, some of whose species have served as human food in various parts of the world. Among such genera occurring in Australia are *Chaetomorpha*, *Codium*, *Monostroma*, *Chnoospora*, *Dictyota*, *Padina*, *Turbinaria*, *Acanthophora*, *Bostrychia*, *Caloglossa*, *Gelidiella*, *Gigartina*, *Grateloupia*, *Laurencia*, *Liagora*, *Nemalion* and *Rhodymenia*.

There are very few poisonous marine algae, and almost any which are pleasant to eat are likely to be harmless. A small number belonging to the group known as blue-green algae are known to be poisonous; it is difficult to give precise directions for recognizing blue-green algae, so any unbranched, filamentous seaweeds with a diameter of about that of a human hair or less should be avoided; it is unlikely that these would be eaten in any case.

Fungi

AMONG FOOD COLLECTED from the wild by civilized man the fungi are some of the most highly prized. In fact, for most people, eating mushrooms is their only practical encounter with wild foods. But, at the same time, there is widespread popular prejudice against fungi just as there is against all snakes, and the great beauty of form of a mushroom or toadstool often goes quite unappreciated.

In Europe, long periods of trial and error, perhaps sometimes enforced by stern necessity in times of famine, have sorted out the edible from the poisonous species; however in Australia there is only the most fragmentary knowledge of the edible properties of our fungal flora. A few species, such as the common mushroom, are widely known and appreciated, but among the hundreds of other gilled fungi only a very few species are so far known to be edible.

Unfortunately, there are no simple tests which can be applied to distinguish edible from poisonous species; reliance cannot be placed on belief that fungi are harmless if they peel, have a ring on the stem, fail to turn dark when left in salt water or fail to turn a silver coin or spoon black when cooking. Even one person's favourable encounter with a particular species does not guarantee its harmlessness to another. Some of the most toxic plants known occur among the gilled fungi; ingestion of even a small portion of the cap of one species may be sufficient to cause death. So, even though the majority of species are probably harmless, experimentation with this group is someting to be approached with extreme caution.

A number of species known to be edible in Europe have been recorded from Australia, but identification of these should be treated with suspicion. In some cases at least it is known that Australian species have been mis-identified because of superficial resemblance to known species from overseas.

Whether or not a fungus is edible often determines the use of the names 'mushroom' and 'toadstool', the edible members, particularly among the gilled fungi, being mushrooms and the rest toadstools. However, these are popular terms without precise meaning and are used in different senses by different people.

It is not always realized that the mushroom picked for the pan is only the fruiting body of an often very extensive underground plant consisting of a mass of fine fungal threads penetrating the soil and drawing its nutrients from decaying vegetable material there. This underground plant survives drought and other unfavourable conditions, and it is only occasionally, when water supply and other conditions combine favourably, that there is the great burst of activity resulting in the appearance overnight of a fruiting body.

In much of Europe, where the soil is almost perpetually moist, the appearance of fruiting bodies is strictly seasonal; it is possible to go out and expect to find a particular fungus at a particular time. But in Australia, with its irregular rainfall and prolonged droughts, the fleshy fungi appear usually only after good falls of rain. This rather spasmodic appearance makes it difficult to detect the seasonal trends in the occurrence of species here.

Mushrooms, other gilled fungi and puffballs can often be observed growing in 'fairy rings'. The underground plant will, if undisturbed, grow from its starting point uniformly in all directions, producing a roughly circular form. When fruiting is stimulated we see the mushrooms produced in the familiar ring. In some cases it is possible to see a ring of impoverished grass even when no mushrooms are present – this is the evidence of the actively growing fungus competing with grass for nutrients, rather than the traditional path worn by dancing fairy feet. In other instances a ring of darker green grass may be seen. The ring keeps expanding year after year and it has been calculated that some still growing in Australia were here before the white man came to the country.

Agaricus campestris FIELD MUSHROOM

This is the wild mushroom most often eaten in Australia. The cultivated mushroom is a different species, *Agaricus bisporus*, of more solid texture, seldom found out of cultivation.

What commonly passes under the name of field mushroom is probably a group of closely related species, all of which seem to be edible, and only a dedicated mushroom hunter or an expert would be conscious of the differences between members of the group.

Mushrooms appear in grassy areas, including suburban lawns, following rain at any time of the year, but probably more commonly in autumn. Not every period of rain is followed by a crop of mushrooms; the underground plant must have reached a suitable stage of growth and food accumulation for fruiting to occur, so there may be an interval of quite a few weeks between crops even if other conditions are favourable.

Specimens occur singly rather than in clumps. The cap is usually white, often with a silky texture, and in the young stage there is a ring on the stalk, although this may be lost at maturity. The most distinctive feature is the bright pink colour of the immature gills, which gradually change through chocolate to purple-brown as the spores mature.

We recommend that mushrooms be cut rather than pulled from the ground. This has the advantage of keeping the picked specimens clean. It is unnecessary to peel or wash them before eating – merely brush off any adhering particles of grass or dirt before cooking. Never use any specimens which have started to decay, or which show signs of insect attack.

Mushrooms are probably at their best fried in butter, and thickened with a little flour and milk. They may, however, be used in a variety of recipes – to add flavour to casseroles, rice dishes etc. Larousse provides about forty different recipes for the use of mushrooms. Raw, they make a delicious savoury if the stalk is removed and the cap filled with cream cheese with a little salt added.
Distribution: Widespread, in all Australian States

Agaricus arvensis HORSE MUSHROOM

The horse mushroom reaches a larger size than the field mushroom, occasional specimens being large enough to cover a dinner plate. It occurs in grassy areas and also in decaying vegetable material such as roadside heaps of cut grass. It can be distinguished from the field mushroom by the absence of a distinct pink colour in the gills which are at first cream-coloured, and by a persistent double ring on the stalk.

Tougher than the field mushroom, the horse mushroom nevertheless makes excellent eating, although some people prefer to cut away some of the tough pith of the cap before cooking.

The species is common in southern States but relatively rare in Queensland.

Distribution: All eastern States

Auricularia polytricha HAIRY JEW'S EAR

Amongst the fungi, probably many people would find the Jew's ears the most repulsive group. Thick and gelatinous or leathery in texture, sometimes with raised ridges on the concave surface, its appearance explains the origin of the common name. (This common name is thought by some scientists to be a corruption of 'Judas's ear'.)

There are several species of *Auricularia. A. polytricha* is fairly widespread in Australia. The strongly convex 'ears' or brackets are found on decaying wood, usually in rainforests and moist gullies rather than open forest country. They are thin, tough and leathery, and are usually attached at one point only, sometimes by a short stalk. The upper (convex) surface is velvety with a dense grey coating of pale hairs, the lower (concave) surface is smooth and purple-brown, often with a pale bloom of spores. In dry weather the fungus shrinks to a rigid contorted form but quickly regains its original condition on the return of wet weather, or on soaking.

This species is used extensively in Chinese cooking in dishes where it absorbs the flavour of other foods. It has not, itself, a strong flavour. The ears are tough and need to be sliced finely for use. If they have become dry and rigid, they should be soaked for about twenty minutes before slicing.

Even prolonged cooking does not have much effect on the cartilaginous texture. We tried stewing some in milk for about two and a half hours; on tasting at the end of this period, we decided that the fungus had the texture one might expect of a boiled ear, and the flavour of a stewed plastic bag. However in a well-flavoured stew or Chinese dish the ears make an interesting addition.

A. polytricha is semi-cultivated on logs in China, and was formerly exported in considerable quantities to that country from Australia.

Distribution: Probably all States

Auricularia delicata JEW'S EAR

This tropical jew's ear is common in rainforests on rotting logs where it grows singly or in groups sometimes of several dozens. The ears, sometimes up to 8 cm broad, are glistening brown or tan coloured, and very rubbery-gelatinous; they are attached at one point only. The irregular close network of raised ridges on the lower surface heightens the resemblance to an ear, or perhaps to a piece of tripe. Brackets of *A. delicata* do not persist as do those of *A. polytricha*, and after maturity they fall and rot into a soft mass of brownish jelly on the ground.

Specimens in good condition may be collected and cooked almost at once, or dried for future use, when they form a thin gelatinous wafer with little resemblance to the fresh material. On soaking they regain the fresh condition; they do not need prolonged cooking as they are much softer than the hairy Jew's ear, but like it they are quite tasteless if cooked alone, so should preferably be used as addition to some savoury meat dish.
Distribution: Qld, N.S.W.

Coprinus comatus INK CAP

The ink caps are a group of species with the same general form as the mushroom, but with the gilled cap in the early stage forming almost a cylinder around the stalk. As the plant matures, the cap expands upwards and outwards, progressively collapsing at the edges into a shiny black ink until only the stalk with a ragged fringe remains.

Perhaps Shelley had the ink cap in mind when he wrote his uncomplimentary description of fungi:

Their moss rotted off them, flake by flake,
Till the thick stalk stuck like a murderer's stake
Where rags of loose flesh yet tremble on high,
Infecting the winds that wander by.

Many species of *Coprinus*, as the name indicates, occur on dung. Species in Australia which occur on the dung of introduced animals such as horses and cattle may also have been introduced.

Most *Coprinus* species are too small to be bothered with but *C. comatus* is a giant amongst this group, reaching 30 cm or more in height. It is well worth eating if it can be collected before it starts to collapse; the delicate flavour is rather like that of mushrooms but with a distinctive quality of its own. The plant grows in lawns and pastures, but we have come across it only rarely. The largest crop we have seen was on soil covering a rubbish dump. In England also, vast crops of this species have been reported in similar positions. The somewhat similar but smaller *C. atramentarius* lacks the ring on the stem which is present in *C. comatus*. This species is edible, but has been reported to cause discomfort if taken in conjunction with alcohol.

The black fluid into which the *Coprinus* fruiting body collapses can be used as ink. One of us once wrote a school exercise in *Coprinus* ink and received scant praise from a school teacher with limited appreciation of the local flora.

Distribution: *C. atramentarius* – N.S.W., Vic., S.A.
C. comatus – Qld, N.S.W., Vic., S.A.

Cyttaria BEECH FUNGUS, BEECH ORANGE

Cyttaria is found only as a parasite on the southern beech, *Nothofagus*, where, in the host's branches, it induces woody swellings from which the fruiting bodies emerge during spring. The rounded, orange-yellow fruits, up to a few centimetres in diameter, are marked with numerous saucer-shaped depressions which produce a honeycomb-like appearance. In Victoria and Tasmania the species on *Nothofagus cunninghamii* is *Cyttaria gunnii*, while in northern New South Wales and Queensland *C. septentrionalis* grows on *Nothofagus moorei*. When Charles Darwin visited Tierra del Fuego in 1834, he found that the *Cyttaria* on the southern beech there were eaten uncooked with fish and formed 'a very essential article of food for the Fuegian'.

We have tried both the above species raw and found them remarkably lacking in flavour, although not unpleasant. Cooked in a little butter, *C. gunnii* was more enjoyable although still not really tasty; one member of the family likened it to zucchini.

Distribution: *C. gunnii* – Vic., Tas.
C. septentrionalis – Qld, N.S.W.

Hericium clathroides STALACTITE FUNGUS

This spectacularly beautiful fungus produces fruiting bodies 15 cm or more in height, consisting of a mass of stalactite-like branches,

whose white or pale cream substance is contrasted against the dark wood from which it emerges. Usually confined to areas such as rainforests which remain damp for long periods, it is by no means a common fungus but one with a delicate flavour well worth eating.
Distribution: Qld, N.S.W., Vic., Tas.

Macrolepiota procera (*Lepiota procera*) PARASOL MUSHROOM

This beautiful fungus with its broad symmetrical white cap topping a straight stalk up to 30 cm high stands out prominently on a green pasture. As in all the species of *Macrolepiota* the stalk breaks away cleanly from the cap, and the ring is very prominent; in *M. procera* it can be moved up and down the stalk. The spores do not darken at maturity so the gills retain their whiteness.

The parasol mushroom is an excellent edible species, the large size making it particularly attractive. The brownish colour in the felty surface of the stalk and the presence of large brown scales on the cap help to distinguish *M. procera* from the otherwise similar *M. dolichaula* which affects most people adversely.

Specimens are sometimes found in quantity in late summer and autumn after rain in grassy paddocks and lawns.
Distribution: All eastern States

Lycoperdon and *Calvatia* PUFFBALLS

A much-maligned group, regarded by many as good only for kicking, and necessitating thorough handwashing if touched, the puffballs are not only harmless but good to eat.

Mostly rounded to broadly pear-shaped, they vary from small plants like hail on a lawn to giants such as *Calvatia gigantea* which in Australia has been found at least 35 cm in diameter, and in U.S.A. is recorded with the enormous diameter of 100 cm. A Canadian specimen weighing over 10 kg was estimated to contain 15,000,000,000,000 spores.

As the puffball matures, the whole interior turns yellowish and finally brown, when the millions of dust-like spores escape, through a small pore in the case of *Lycoperdon*; in the case of *Calvatia* escape is by the loss of the whole wall, leaving a powder-puff mass of spores and fine fungal threads which is gradually eroded away by the wind.

While the interior is still white, puffballs make good eating. The small ones can be cooked whole and the larger ones cut up into steaks a centimetre or two thick. Although resembling that of mushrooms, the flavour is usually milder; eaten raw they are fairly tasteless. They need not be peeled – just remove the basal portion which is usually dirty.

There are about sixteen species of *Lycoperdon* and *Calvatia* known from Australia. They occur in a wide range of habitats from rainforest to beach dunes, but will be most often found in grassy paddocks and lawns after rain.

Distribution: All States

Morchella MOREL

The morel has a stout stalk topped by a conical yellow-brown to dark brown cap marked by a prominent network of ridges. Apparently rare in Australia it is only occasionally that one has a chance to sample it. The only specimen that we tried had a very mild flavour which possibly takes experience to appreciate fully; in Europe and North America the morel is one of the most highly regarded of the edible fungi. It is probably at its best fried lightly in butter, but being hollow lends itself to stuffing for those who wish to 'gild the lily'.

There are a number of reports of otherwise harmless fungi proving toxic, causing severe vomiting and diarrhoea, when taken in conjunction with alcohol. *Morchella* and *Coprinus* are two of the genera involved.

Distribution: Some species in all States

Polyporus mylittae BLACKFELLOW'S BREAD

This curious fungus is rarely seen, although it is widely distributed from arid eucalypt country to mountain rainforest. Its most characteristic structure is a hard underground tuber, rounded or irregular, and up to 30 cm in diameter. When dug up it could easily be mistaken for a stone and has, in fact, been called stone fungus. Occasionally it produces a fruiting body with the general external form of a mushroom but with pores in place of gills.

The interior of the tuber is whitish, coarsely granular, and in the fresh condition has a rubbery-gristly texture which becomes extremely hard on drying. We have not sampled this tuber but it is reported to be rather tasteless. Although it seems an unlikely item

of food there is fairly good evidence that its common name is justified, the Aborigines even regarding it as a delicacy.
Distribution: All States

Ramaria ochraceo-salmonicolor CORAL FUNGUS

There is a large group of fleshy fungi with erect branches, cylindrical, club-shaped or sometimes much branched to form a coral-like mass. These are the coral or club fungi, mostly found in forest rather than in open grassland. Many are edible, but unfortunately the Australian species are poorly known. It is likely that any coral fungus without an unpleasant taste is edible.

One of the largest is *R. ochraceo-salmonicolor*, salmon-pink to orange, which is densely branched to form cauliflower-like masses up to 15 cm high. Treated in the same way as mushrooms, this is eaten in Victoria, and we have eaten either this or a closely related species in Queensland.
Distribution: Probably all States

*Rhizopogon rubescens** PINE FUNGUS

In most puffballs the spores at maturity become a powdery mass and are dispersed by wind. There is a related group, sometimes referred to as subterranean puffballs, in which the fruiting body remains fleshy; the spores in this case are dispersed following decay of the fruiting body or following eating by various animals. *Rhizopogon* belongs to this group.

Rhizopogon rubescens fruits are yellowish-brown, showing red bruise marks where they are cut or handled. They may be up to 6 cm diameter and are of irregularly round shape, occurring often clustered closely together. They are of a firm fleshy texture and show a fine honeycomb pattern of hollow chambers when cut open.

The fungus grows in close association with the roots of exotic *Pinus*, so is to be collected only under these trees. It is assumed to have been introduced to Australia in soil with pine trees from one or more of the countries where it occurs naturally. The fungus seems to be necessary for successful growth of the pines, and in their association the fungal partner aids nutrient uptake by the tree. The fruits are found under the surface layer of pine needles or half-projecting from it.

The species is eaten and appreciated overseas, but seems to have been used very little in Australia. In Japan specimens have been canned and sold as 'shohro'.

A closely related species, *R. luteolus*, is also collected under *Pinus*; it is edible, although when mature it becomes much more horny than *R. rubescens*.

There is considerable variety in native Australian species of subterranean puffballs. None has yet been used for food – usually they are found only in small quantities, and as they occur completely hidden beneath the surface litter in rainforest or eucalypt forest they are not easily collected. Sometimes they are found lying on the surface, having been scratched up by animals such as bandicoots and scrub turkeys.
Distribution: All States.

Truffles

Gourmets prize truffles as perhaps the most desirable of all fungi. Botanically placed in the order Tuberales, the truffles produce their fruiting bodies below ground. These vary in form, being in general irregularly globose in shape, several centimetres in diameter and having a solid honeycomb-like internal structure. Strongly flavoured, they can be used in very small quantities to add a distinctive touch to meat and poultry dishes; some are used raw, thinly sliced, as a garnish.

The most highly regarded truffles are those found in the Perigord district of France, but members of the group occur in a number of European countries and are probably worldwide. Being subterranean, they are not easy to find, and in Europe pigs, trained dogs and even bears have been used to scent out the highly perfumed delicacies.

A few species of truffle have been found in Australia, particularly in New South Wales and Queensland. They are extremely rare and comparatively small, up to 2·5 cm diameter, and although truffles are of great culinary interest, the dozen or so specimens which have been found in eastern Australia are of very much greater value to scientists than to cooks, so they have not been tasted. They have been found in rainforest and eucalypt forest, some by chance exposure following animal diggings, others by scientific collectors.

Although most truffles occur in moist areas, a surprising occurrence has been noted in an arid region in the vicinity of Lake

Mackay near the West Australian–Northern Territory border. The species involved is *Elderia arenivaga*, and the Aborigines are reported to consume vast quantities of its fruiting bodies.
Distribution: Probably some species in all States

WHAT TO AVOID

While the number of Australian fungi known definitely to be edible is small, the number known with certainty to be poisonous is probably even smaller. It is possible here to mention only a few which might be confused with edible species or which are so extremely poisonous they should be avoided at all costs.

Agaricus xanthodermus IODOFORM MUSHROOM

This fungus resembles the horse mushroom in its double-structured persistent ring, in the absence of obviously pink gills at any stage, and in a tendency to be thimble-shaped in the young stage. However, it differs in its proportionally longer stalk, usually appreciably longer than the diameter of the cap, in the more pronounced yellowish bruise marks on cap and stalk, and especially in its distinctive odour. This has been likened to iodoform or disinfectant and varies considerably in different collections. In the field there may sometimes be doubt as to the presence of this odour, but if the fungi are kept in a closed container such as a plastic bag for half an hour and then sniffed, no doubt will remain. The odour often becomes more prominent on cooking.

Some people eat and enjoy this mushroom. However it should be treated with suspicion. A supposedly well-wishing relative once gave us a basketful of these mushrooms which he claimed he had no time to eat; with only a faint disinfectant odour detectable, the offer was accepted with gratitude, but twenty minutes after eating them we decided that our identification as horse mushrooms had been overhasty. Nausea persisted for the rest of the day, and for about a year after this incident even 'good' mushrooms had no appeal. Distribution: Qld, N.S.W., Vic., S.A.

Amanita

Amanita resembles the mushroom in general form but differs in the possession of white gills and the presence of a cup at the base of the stalk. In the early stage, while the immature fruiting body is still more or less underground, it has the form of a rubbery ball or 'egg' about 3 cm in diameter. This bursts, releasing the stalk and cap which expand, while the lower part of the burst skin remains as a cup, the so-called death cup, sometimes almost underground, in which the base of the stalk is seated.

There are several species of *Amanita* in Australia, and some of them may well be edible. However, there are some extremely poisonous members of the genus, so there is an understandable hesitancy about experimenting with any of them.

A. muscaria, the fly agaric, is a beautiful species, its bright red cap flecked with white and often appearing in illustrations of fairy tales. It has been reported from Victoria, but is probably an immigrant from the Northern Hemisphere, as it has been found only in association with introduced trees. In Europe it was, at one time, mixed with water and put out as a fly poison. Some tribes in northern Europe ate it to produce a kind of intoxication often leading to acts of great violence. The word 'berserk' is derived from one of these periodically violent groups who are thought to have eaten the fungus as preparation for battles.

A. phalloides, the death cap, not yet found in Australia, has a dull greenish cap. Even a small portion can cause death, usually after 4–10 days of great suffering. The fungus is apparently of excellent flavour and the first symptoms, vomiting and diarrhoea, do not appear until about twelve hours after eating; by that time the poison has been absorbed and the chances of recovery are poor.

Macrolepiota dolichaula (*Lepiota dolichaula*)

All the *Macrolepiotas* are similar and distinctive with white cap and spores, and elongate white stalk with prominent ring. This one is characterized by its large size and general similarity to *M. procera*, but may be distinguished from it by its pure whiteness with no brown scales on the cap, and with no brown felt on the smooth white stalk. Specimens may be up to 30 cm tall.

This species is regarded as poisonous. It has not been widely eaten, but one of our colleagues ate it with no ill effects while his wife was violently ill after the same meal.

Distribution: Qld, N.S.W.

Chlorophyllum molybdites (*Lepiota molybdites*)

This species has the same general appearance as *M. procera* but differs in its more squat form, white non-felted stalk, and in the gills which turn green or grey-green as they age.

The authors have eaten this species without ill effects but it is poisonous to some people.
Distribution: Qld, N.S.W.

Psilocybe cubensis GOLD TOP, HYSTERIA TOADSTOOL

'Mushroom' poisonings occurring in southern Queensland and northern New South Wales were not definitely attributed to this species until 1958. Although quite easily confused with the field mushroom, the gold top can be distinguished by its relatively longer stalk, tendency to yellowish staining of the cap, particularly at the centre, and its habit of growing in small clumps on dung; while the field mushroom has the gills distinctly pink in the young stage, *Psilocybe* gills are at first dirty white, passing through grey to grey-black with a purplish tinge. Bruising of the stalk often causes a blue-green staining which never appears on *Agaricus*.

Mildly poisoned eaters of the gold top may experience a feeling of great well-being, uncontrolled mirth or disturbance of vision. One victim decided it was time to seek medical aid when he started receiving a coloured picture from his black and white television set.

In recent years this species has been discovered by the drug-taking community. The active principle is psilocybin, one of the so-called mind drugs, a hallucinogen and a prohibited drug; successful prosecutions have been launched by the police for the possession of this fungus.

In Mexico and Central and South America a sacred mushroom cult, which extended back at least several centuries, was based on species of *Psilocybe*. The mushrooms were eaten as part of religious rituals to produce amazing visions and foreknowledge of the future. To a limited extent this cult still exists.
Distribution: Qld, N.S.W.

11 Animals

THE BULK OF THIS BOOK has been devoted to wild plants which may be eaten, but some account must also be given of the edible animals available. This section is deliberately incomplete; we do not, for example, include descriptions of those birds which may still legally be shot by sportsmen; we have omitted recipes for kangaroo-tail soup. A considerable number of the animals which were popular for food in the early days of white settlement in Australia are now protected, as their numbers have been depleted to the point of concern both by shooting and trapping, and by destruction of their natural habitats. We have, therefore, discussed below only those species which it seems reasonable to use, remembering in these cases also that low limits should be placed on the collection or destruction of any of the native fauna.

Bearing this in mind, it is none the less interesting to consider the animal diet of the Aborigines. Theirs was often a harsh environment and they used whatever it was possible to use for food. A Sunday morning activity in 1891 has been described as follows: 'During the sunny hours of the forenoon (it was Sunday, and work was suspended) many were engaged freeing each other of the vermin on their heads. The larger of these are not despised as a dainty morsel.' March flies would not be relished by many people today, but were included in the diet of some tribes. The Aborigines of southern Australia, and especially of Tasmania, used a higher proportion of meat than those of the tropical north who had, as we have seen, a wider range of food plants. Coastal tribes obviously had fish, shellfish and turtles which were unavailable to inland tribes.

We probably think first of kangaroos as the animals eaten by the Aborigines who hunted them either by using dogs or by tracking from leeward and then spearing them. One interesting record tells how 'If by himself the hunter will paint himself completely over with yellow ochre (with this pigment or earth rubbed well into his arm-pits, etc, so as to kill the smell of his perspiration) and make himself resemble an ant-bed under the guise of which he can gradually approach to within a very short distance.' Firing the grass was frequently used to drive the animals towards the hunters.

Other marsupials of course were killed also. Wombats were dug or smoked out of their burrows and bandicoots were extracted from dead logs, sometimes using a prodder of lawyer vine to determine whether or not one was there. Possums could be hunted at night, or detected during the day by claw-marks on a tree-trunk. The tribe in the Rockhampton district used the observation of mosquitoes flying into and out of a hollow tree to detect the presence of a possum.

Emus were hunted by many different methods, including running down with dogs, spearing and mustering like cattle, followed by driving the mob into a waterhole where they could be fairly easily killed; in some districts they were trapped in pits, lightly covered with vegetation, dug near a fruit tree favoured by the emu; in other cases nets were used for trapping, sometimes in combination with an alley-way built of rough bush fences.

Birds of all kinds were eaten when they could be caught. Various methods involved the use of nets or boomerangs, traps made of lawyer vine and snares of different kinds. Water birds, or parrots coming to drink, were caught by a hunter in ambush in the water, disguised with bushes tied around his head and face. Although we may not like the thought of budgerigars and other small birds being netted and eaten, the Aborigines exercised a fairly natural control compared with the vast depredations of many native species since the coming of the white man. All species of birds' eggs, too, were eaten.

A paraphrase of an old popular song goes 'If I knew you were coming, I'd have baked a snake'. The Aborigines used snakes of various kinds as food, and the flavour has been recommended by present-day chefs and gourmets as well. Any snake was, and may be, used, baked in the coals of a campfire or in a domestic oven. In the case of venomous snakes the poison is in glands in the head region only, the flesh being quite safe to eat. Frogs too may be included in the diet, and were gathered in 'dozens and dozens' by the Aborigines; frog-eaters of today will probably prefer to use only the legs of the animals, floured, seasoned, and fried in butter. Avoid the introduced cane toad, *Bufo marinus*, which has copious poison glands in its skin and has caused poisoning of small domestic animals.

Without listing all the animals eaten by the Aborigines we can safely say that they ate all the species they could, and often in very large amounts. The anthropologist Helms was impressed to record that 'Billy . . . had tracked an emu and came in with three eggs. We had one of the two he gave us for supper between the two of us, but Billy ate his, which was a very large one, after an entree of an iguana about 18 inches long, followed by an opossum for second course. All these victuals were cooked in the hot sand and tasted delicious, which no doubt induced Billy to cook a second iguana at once and another opossum afterwards. An emu egg, two iguanas and two opossums, besides some tea and bread, I think is a fair record of a black's appetite.' Helms and other writers also have written of the delicious food produced by the Aborigines, who cooked possums, goannas and other small animals whole with heated stones and removed the skin when the animal was cooked.

The explorers sampled many of the native animals for food. Banks tried kangaroo when the *Endeavour* was beached in north Queensland, and found it 'excellent meat'. Leichhardt, of course, did not restrict his diet. He wrote: 'Iguanas, opossums, and birds of all kinds, had for some time past been most gladly consigned to our stewing-pot, neither good, bad, nor indifferent being rejected.' Leichhardt and his companions enjoyed fried emu; they let nothing go to waste: '. . . we cut part of their meat into slices, and dried it on green hide ropes; the bones, heads, and necks were stewed: formerly we threw the heads, gizzards, and feet away, but necessity had taught us economy; and, upon trial, the feet of young emus were found to be as good and tender as cow-heel.' Most people would regard crow as almost impossible to eat, yet Leichhardt recorded that 'A crow was shot and roasted, and found to be exceedingly tender, which we considered to be a great discovery; and lost no opportunity of shooting as many as we could, in order to lessen the consumption of dried meat.'

Emus are protected birds, so we shall never know the delights of stewed emu gizzard; most of us too will probably refrain from roast crow. Of the species hereunder, we suspect that many will remain untasted, but a little adventurous gastronomic spirit may produce some pleasant surprises as it did for Leichhardt.

The adult of one species of moth was a major item of food for some Aborigines over limited periods. This was the Bogong moth. Its larva is a cutworm well known as a pest in southeastern Australia. In spring, the moths migrate to the mountains and congregate in rocky crevices. The Aborigines collected them in large quantities, first stupefying them with smoke. A fire was then prepared and when the ground beneath was sufficiently hot the ashes and embers were cleared away and the moths stirred on the heated ground to remove wings and down. The cleaned moths were eaten directly or pounded and moulded into cakes which were reported to resemble lumps of fat. Apparently, the food was one for which some persistence was required, since Brough Smyth wrote that 'The first time this diet is used by the native tribes, violent vomiting and other debilitating effects are produced, but after a few days they become accustomed to its use, and then thrive and fatten exceedingly upon it.'

Distribution: N.S.W., Vic.

Ants

Most people who have visited northern Queensland will be familiar with the green tree ant (*Oecophylla smaragdina*) which attacks intruders so vigorously. Aborigines regarded these insects in a more favourable light than do present inhabitants and made them just one more item on the menu. The nests were cut down and opened up, the white pupae were then collected, rubbed into a ball and swallowed; sometimes the crushed mass was washed before eating, and the washing water drunk as well. In some areas the adult ants also were kneaded in with the pupae.

Pupae of various terrestrial species were used in different parts of Australia; one used by the Goulburn tribe was reported to 'possess a very peculiar aroma.' Another had a flavour resembling that of a mixture of butter and sugar.

Other ants eaten were the honey ants (*Melophorus* spp.) of inland areas. In some individuals of these species the abdomen becomes enormously inflated to the size of a marble, and filled with a yellowish, sugary solution of stored food. These 'honey pots' are still regarded as a great delicacy by the Aborigines who are prepared

to go to considerable trouble to dig them out.
Distribution: *Oecophylla smaragdina* – Qld
Melophorus spp. – Arid inland, probably all mainland States

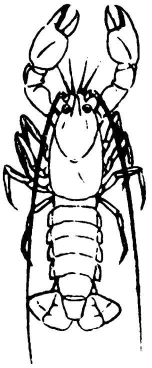
Bats

Most bats are small animals, many with bodies no larger than those of mice. However, a few of the fruit bats, commonly known as flying foxes, reach considerably larger sizes and weights up to about 1 kg. We have not eaten flying fox, but have been told that it is of excellent flavour and resembles chicken. The animals are usually roasted whole in the coals, only the wings being removed first. Squeamish diners may remove the entrails after cooking, but it is not necessary to do so beforehand; the skin is not eaten.

Flying foxes were a greatly appreciated article of food both to the Aborigines and to some of the white pioneers. Leichhardt and his party, at one stage on their expedition, feasted on twenty-nine flying foxes. They have been widely used in southeast Asian countries.
Distribution: Some species in all States

Cicadas

The empty cases of cicada nymphs, still tightly grasping their support, are common objects on the bases of tree trunks where the emerged adults have left them. On damp nights the Aborigines collected the nymphs as they emerged from the ground, but we do not know whether they ate the insects raw or cooked.
Distribution: All States



Freshwater Crayfish

One of the pleasures of youth, now not so easily enjoyed with many gullies becoming drains, was to go crayfishing. A piece of string with a small lump of meat or bone tied to one end was the only essential equipment. As a tightening string indicated business at the other end, a quick jerk would sometimes bring the crayfish straight out of the water still hanging on to the bait; better still was a scoop with a net at the point where the end of the string was thought to be.

If the water is clear, quiet observation, a careful approach with the hand, and a last-second snatch will bring an occasional reward and nipped fingers.

Along streams and pools with a falling water level, crayfish can sometimes be found under stones near the edge. Always replace the stones as they are found so that other animals sheltering there will not be destroyed by the sudden change.

There are numerous species of freshwater crayfish in Australia ranging from a Tasmanian giant reported to reach nearly 4 kg to some too small to be worth eating.

The boiled 'tails' are of excellent flavour, and all the sweeter for being cooked in a billy over an open fire.
Distribution: Some species in all States

Insect Galls

'Bloodwood apples' have nothing to do with the fruit of the rough-barked eucalypts known as bloodwoods. They are the rounded galls, 2–5 cm across, produced by the plant as the result of stimulus supplied by the feeding larva of an insect of the genus *Cystococcus*. Aborigines ate the insect at the centre which is reported to have a sweet taste; the surrounding gall tissue also seems to have been eaten in some cases but we cannot speak of it from personal experience.
Distribution: Qld, N.S.W., W.A., N.T.

Marine Molluscs

Present-day use of marine shellfish in Australia is limited mainly to oysters, scallops and abalone. A far greater variety could be used although the quality of some is not high. Aboriginal shell middens provide an excellent record of what was used in an earlier time, and they contain many species never on sale and seldom if ever eaten now.

In Europe, sackfuls of the small intertidal gastropods known as periwinkles may be seen on sale in street markets. These shells have their Australian counterpart which can be used in the same way; boil for about ten minutes, then hook out the animal with a bent pin. We have tried them but have not yet acquired the taste.

Cockles and mussels, celebrated in the old song, also have their

Australian representatives. On some intertidal shores mussels occur so densely as to form an almost complete cover. The numerous species of cockles are found on sandy or muddy floors, usually at or below low water mark. Cockles and mussels can be cooked in boiling water for about ten minutes then eaten unadorned, made into soup or fried in fritters.

It is worth remembering that bivalves such as oysters are filter feeders and, if living in polluted waters, may accumulate large quantities of harmful bacteria or of various pollutants. They are capable of concentrating DDT 70,000-fold in one month.

The large adductor muscle of the clams growing along the Great Barrier Reef is regarded as a delicacy in the Orient and vast numbers have been poached for sale there. These shellfish are now completely protected so it is too late for Australians to develop a liking for them.

An extremely common bivalve along many of the ocean beaches of eastern and southern Australia is the pipi or ugari (*Plebidonax deltoides*). Its smooth, wedge-shaped shells, 5–6 cm long, are found in enormous quantities in some of the Aboriginal shell middens amongst the dunes just behind the beaches. The shells are easily collected by standing in the surf near low water mark and doing a hip-swaying wriggle until the feet, sinking into the sand, encounter something hard. Fishermen value the pipi as bait and have largely exterminated it from some beaches. However, it also makes excellent food for humans and there are plenty of people who have eaten it. The large, pointed foot is the part to be used raw or cooked, and is excellent made into fritters or soup.

The shipworm, or cobra to the Aborigines, comprises a group of species which has done enormous damage to wharf piles and ships. Although these animals look rather worm-like, they are actually highly modified bivalves. They bore through timber, producing a calcareous lining to their tubes as they go. These molluscs were highly regarded as food by the Aborigines; they are not a common item of food among white men but James Backhouse, when he visited Brisbane in 1836, wrote of a white man who had eaten them while lost and found them very palatable.

In spite of their unusual appearance, squid and cuttlefish also are molluscs. They are popular items of food in some countries but in Australia are generally regarded as fit only for bait. This seems a waste because they are of excellent flavour. Both the tentacles and the body may be eaten, either boiled or fried.

Distribution: *Plebidonax deltoides* – Qld, N.S.W., Vic., S.A.
Shipworm – Some species in all States

Freshwater Mussels

Amongst the Australian freshwater molluscs are several species of bivalves commonly known as mussels. These vary in size up to about 17 cm long, and are black on the outside, with a white or pearly patch where the black shell has worn away. Mussels are common inhabitants of freshwater creeks; as children we used to find them by wading up the creek feeling in the mud or sand with our toes, after the manner of the Aborigines. The shellfish 'stands' vertically in the creek bed with about 2 cm protruding, and is easily pulled out; it is free-living, not attached to rocks or wood. When searching in creeks, watch out for dangerous broken bottles. Presence of mussels in a stream may sometimes be indicated by open or broken shells lying on the bank. In inland areas where a creek dries out during a drought the mussels can lie dormant with their shells sealed for months until rain comes again.

The Aborigines ate the mussels after roasting them in the shell. Large ones tend to be tough, but small ones would probably suit today's palates well enough; when we have used the shellfish it has always been to make a delicious soup. First scrub the shells in plenty of water to remove the mud; place them in a large basin and pour over boiling water to kill the mussels and open the shells, otherwise they are virtually impossible to open – the valves are held fast by a powerful muscle. The animals can then be removed from the shells. At this stage look for pearls in the mantle (the thin membrane stretching from the lip of the shell) formed in the same way as those in the pearl oyster. These are occasionally found in mussels; usually they are irregular and dull but fun to find nevertheless. The mussels are then covered with water and simmered gently for about an hour; strain and discard the meat, thicken with milk and flour, season with salt and pepper, and a delicious meal is ready to eat. Twenty or so of the mussels will make a good pot of soup for about six people.

Like oysters and other bivalves, mussels are filter feeders so

should not be collected from polluted streams.
Distribution: Some species in all States

Pyura stolonifera CUNJEVOI, SEA SQUIRT

The large tunicate commonly known as cunjevoi is common on many rocky shores in eastern Australia, and extends downwards from a little above low water mark. Its leathery cylinders, often 15 cm high, stand closely packed together, sometimes forming an unbroken layer on which one may walk if undeterred by jets of water from the disturbed animals. Fishermen value the red contents of the leathery skin as bait. As food for human consumption appearances are against it, but perhaps no more so than are those of an oyster. We have not eaten this animal, but know of one man who has done so without complaint, having been introduced to it by Aboriginal friends.
Distribution: Qld, N.S.W., Vic., Tas.

Shrimps

Like most common names, 'shrimp' can mean whatever the user intends, but generally in Australia it is used for a considerable number of species of freshwater crustaceans of generally similar appearance to the marine prawn. They are found in lakes and creeks where they feed on detritus, and are inclined to 'nibble' at the feet of swimmers who stay in one place for more than a few minutes.

Shrimps are easy to catch. They may be taken in a small handnet, or in a trap of some kind set and baited. We often use a billy with a bone or scrap of meat tied inside it. This can be pulled out of the water every half-hour or so by a string tied to the handle, and the catch removed to another container with a lid to prevent escape. When enough have been collected they are cooked by dropping them into boiling water for about two minutes. Usually the collectors are then surprised to find how very small the edible part of the catch is, and decide to open a tin of stew to follow.
Distribution: Some species in all States

Tortoises

In quiet streams and lakes the presence of freshwater tortoises can usually be detected by the appearance of the dark tip of the head at the surface of the water. With any sudden noise or disturbance the snout is quietly withdrawn. There are several species of tortoise in Australia, most of them of the genera *Chelodina* and *Emydura.*

These freshwater tortoises were popular as food with the Aborigines. After removal of the entrails, the tortoise, still in his shell, was baked in the ashes.

Marine turtles also were used and, at one time, were exploited by the white man, who killed large numbers on the Great Barrier Reef for the preparation of tinned turtle soup. However, turtles are now protected by law in Australia.
Distribution: Some species in all States

Wasps

The papery nests of wasps, which are sometimes discovered so painfully, provided a small store of food for the Aborigines. A bundle of flaming grass or bark was held beneath the nest just long enough to kill or disperse the adults, then the white larvae were picked out and eaten raw.
Distribution: All mainland States

Wild Bees and Native Honey

There are several species of native, stingless bees of the genus *Trigona.* The small, black insects, much smaller than hive bees, build masses of rather irregularly arranged honey cells in hollows of trees. These honey stores were known to the Aborigines as sugar bags.

A dark, waxy edging to a small hole often indicates the presence of a nest somewhere inside. According to one report, Aborigines sometimes detected the nests by placing the ear against a hole in a likely trunk, and listening for the hum of bees inside. Another way of locating a nest was to catch a bee, attach a small piece of down to make it more easily seen, then to follow it to the nest.

Once a nest was found it was cut out with an axe or the honey was extracted with a mop of grass on the end of a stick. In some areas the honey was mixed with water and drunk, but often it was eaten as collected, together with any bees which happened to be mixed in it. The native honeys we have tried have had a distinctive,

attract bees
c̄ sugar - water
painted on inside
of hive.

stun bees c̄
burning saltpetre soaked
rag.

acid flavour, but some are without this acidity.

Small amounts of honey are stored by different bees in hollows in the dead flowering stalks of grass trees, and the Aborigines used this store also.

Distribution: Qld, N.S.W., W.A., N.T.

Witchetty Grubs

In the popular imagination, witchetty grubs occupy the animal niche comparable with nardoo or yams amongst the food plants. Although the correct spelling is *witjuti*, the alternative given above has become much more widely known.

These delicacies are, strictly speaking, the larvae of a large moth of the genus *Xyleutes*, but the term is often fairly loosely applied to any large white grub found in wood. Larvae of moths and cockchafers were consumed in great variety by the Aborigines.

Presence of the grub could often be detected by a sawdust-like heap of excreta on the ground at the bottom of a gum tree. The hunter would then look for a hole about the size of a pea in the bark, chip it open with an axe and use a hook to extract the grub; a skilled hunter could remove the grub from its hole without damaging it and 'spilling the gravy'; sometimes the hooks were made from thorns of the lawyer vine.

Witchetty grubs can be eaten raw or roasted. The one thing to remember is not to eat the head, so the grub is held by that end and the remainder is nipped off. Being over-fastidious, we have not tried them raw, but share the general opinion about pan-fried or grilled witchetty grubs that they are delicious. The flavour is rich, reminiscent of nuts, the latter, we are told, being due to the partly digested wood present.

Distribution: Some species in all States

EPILOGUE

The enthusiast who has put to the test something of what has been set down in the foregoing pages will not, we hope, be suffering thereby. Aborigines and early settlers who drew their sustenance from our native flora and fauna found their remedies for illness in the same source – remedies almost as varied as the contents of a pharmacy, and certainly more interesting and unpredictable. In some cases it is probable that the treatment applied was of definite therapeutic value, but in many the only curative effect was psychological. We have included a few of these 'bush cures' here for their interest rather than as recommendations for their use.

One of the several species used by the Aborigines to cure diarrhoea was the orchid *Cymbidium madidum* whose starchy mucilaginous pseudobulbs were chewed. Another treatment involved the ingestion of large clay or mud pills. If these treatments proved too effective, constipation could be cured by eating the oily mess derived by boiling a young stingray liver.

The Aborigines used several plants to relieve headaches, and, in some areas, there was a general belief that any species with a strong scent was of value for this purpose. One of these plants, to which the common name headache vine is now often applied, was the climber *Clematis glycinoides*. The leaves of this plant, thoroughly crushed in the hand, release a pungent scent which, if vigorously sniffed, produces an unexpected burning sensation in the nasal passages. Headaches are forgotten as the patient wonders whether the top of his head has blown off. One feels that any medicine producing such effects must surely be doing some good.

An encounter with a stinging tree is one of the most suddenly unpleasant experiences to overtake one in the bush. There is a widespread belief that the juice of the cunjevoi (*Alocasia macrorrhizos*), applied to the affected part, eases the very considerable pain caused by the stinging hairs. We should not like to reject this belief entirely, but in our experience it seems to have more psychological than actual value.

Cunjevoi juice, applied externally, has been one of the bush remedies used to treat rheumatism. Some animal oils have also been popular remedies for muscular complaints. Dugong, now a relatively rare animal around Australia, once supported a small fishery in Moreton Bay in Queensland, and its oil was highly regarded as an embrocation. Goanna oil has been used for the same purpose, and is claimed to have such penetrating power that it will leak through a glass bottle!

Cures for spear wounds are not in wide demand today, but there are many other Aboriginal complaints from which modern man still suffers. One of the plants they used to ease the symptoms of coughs and colds was a decoction of *Hibiscus*. The related marshmallow of Europe, which also contains considerable quantities of soothing mucilaginous material, was used there for similar purposes. Another treatment was a drink made by crushing the oily leaves of *Melaleuca* in water. Even today oil from the related *Eucalyptus* is an ingredient of some pharmaceutical cough and cold relievers.

If warts are the complaint, then the milky juice of some of the small species of *Euphorbia*, often called wartworts, applied regularly to the excrescence, are believed to be a sure remedy. Others still swear by the potency of one's own saliva applied first thing in the morning.

The possibility of snakebite has been a widespread justification for keeping a little whisky on hand, but this precaution is unnecessary where the coolibah (*Eucalyptus microtheca*) grows; its inner bark, pounded and used as a poultice, was an Aboriginal treatment for snakebite. Those who lack a strong faith in the curative powers of the native flora may prefer a double-barrelled remedy – steep dried *Hedyotis galiodes* in rum and administer internally, as much as the victim can stand. Bring on the snakes!

Remedies such as those described above, largely neglected by modern man, may in some cases be of value. The corkwood, *Duboisia myoporoides*, was used by the Aborigines to prepare a stupefying drink; it has become known as a valuable source of the drug hyoscine, and has been harvested commercially in considerable quantities for its extraction. A related species is the pituri, *D. hopwoodii*, used as a chewing tobacco by some Aboriginal tribes, a fact of some interest since the plant has been shown to contain nicotine. Two species of *Solanum*, *S. aviculare* and *S. laciniatum*, both commonly known as kangaroo apple, are under cultivation in the Soviet Union for the steroid drugs they contain. Research is still going on into the drug potentialities of the Australian flora, particularly of the lesser-known rainforest areas of north Queensland.

Claims have been made for such widespread efficacy of some species that one wonders at the continued search for wonder drugs. For example, *Ailanthus altissima*, naturalized in parts of New South Wales, has been used in treating dysentery, gonorrhoea, tapeworms, heart complaints and epilepsy. But since its reported side effects include dermatitis, gastritis and nausea, perhaps pharmacies still have their useful place!

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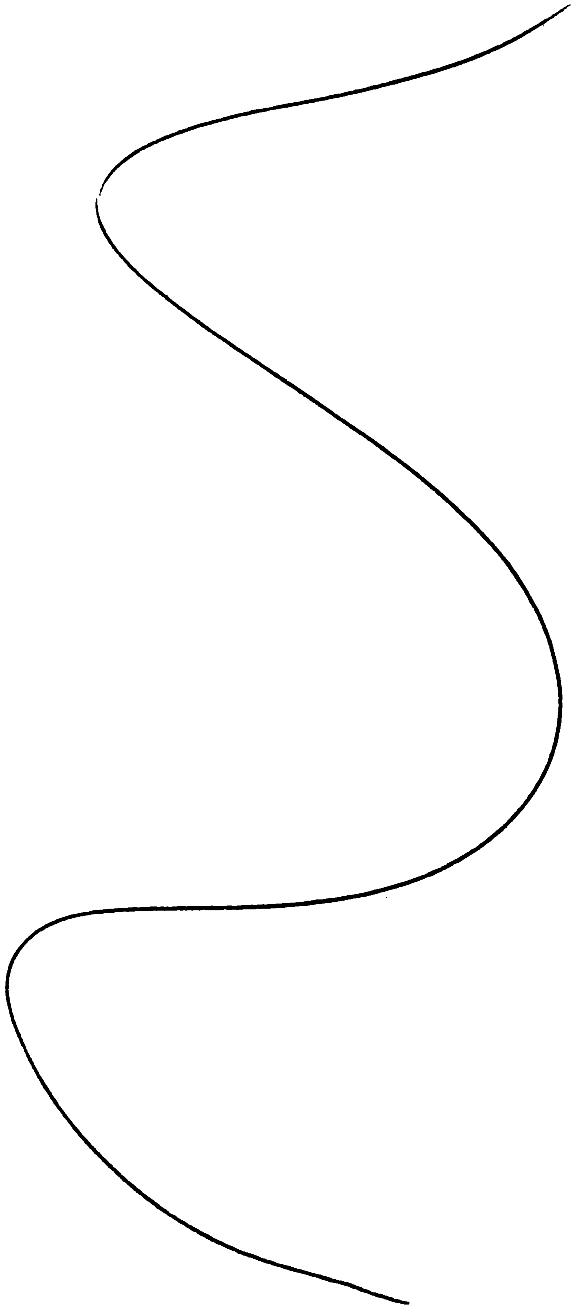

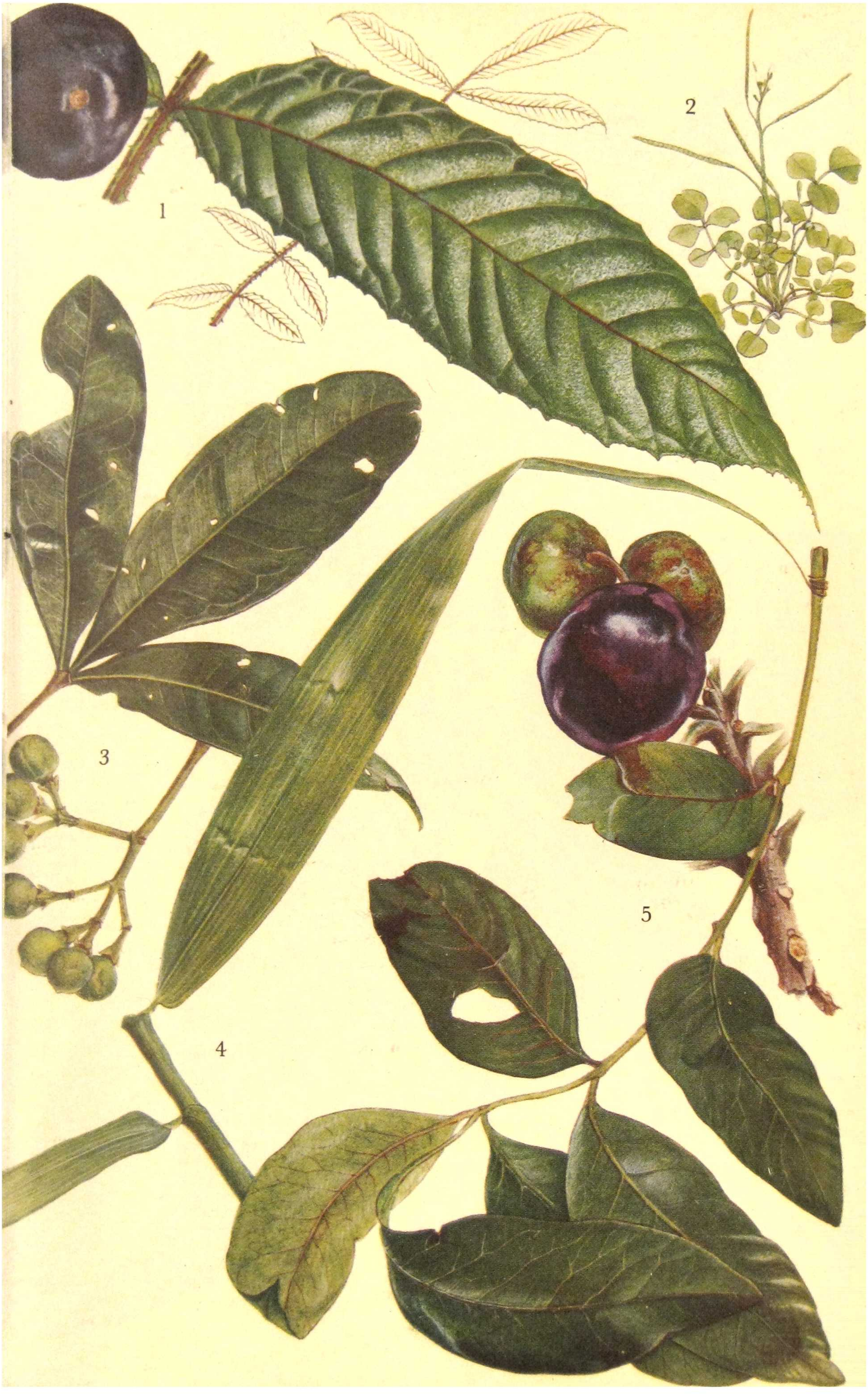
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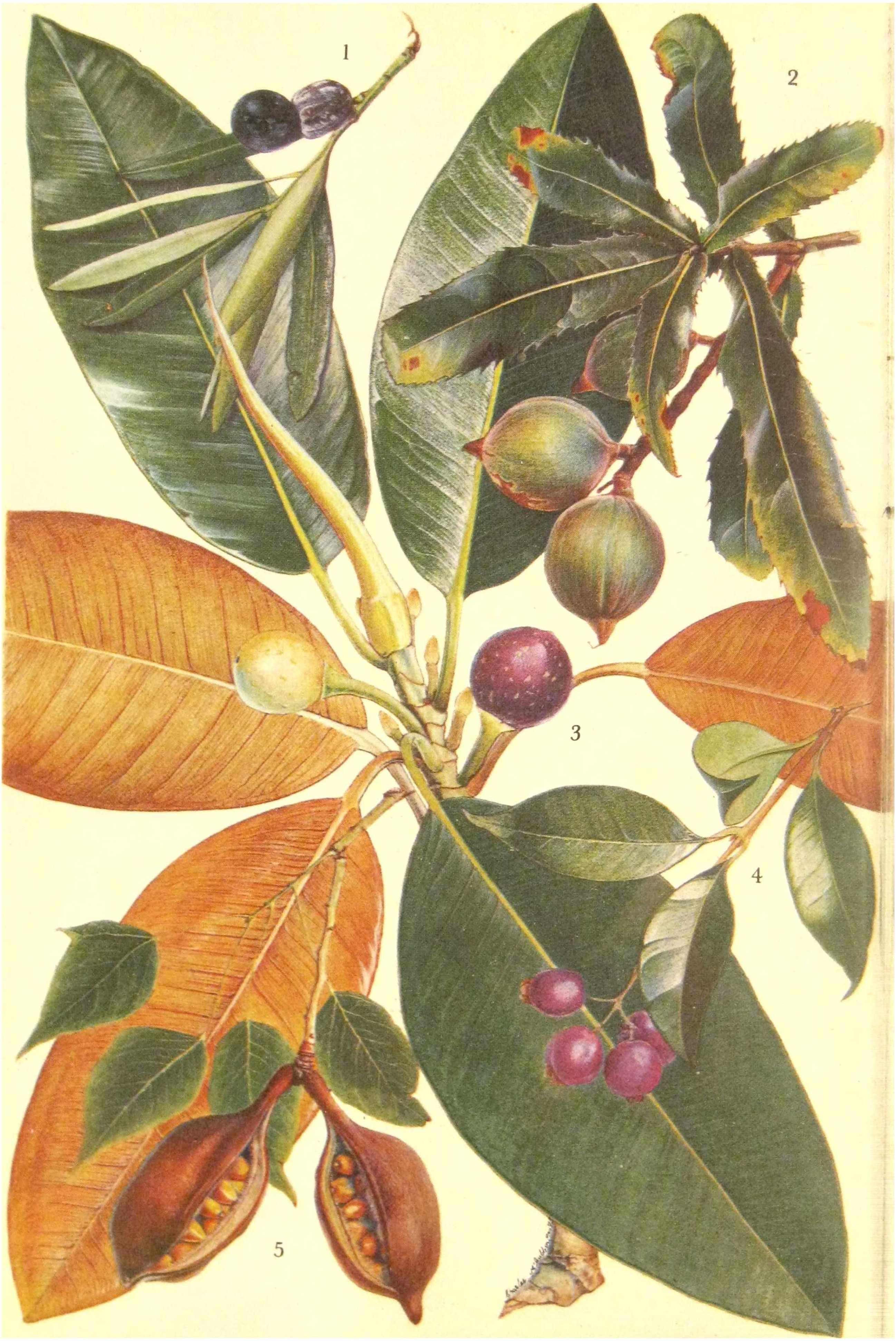
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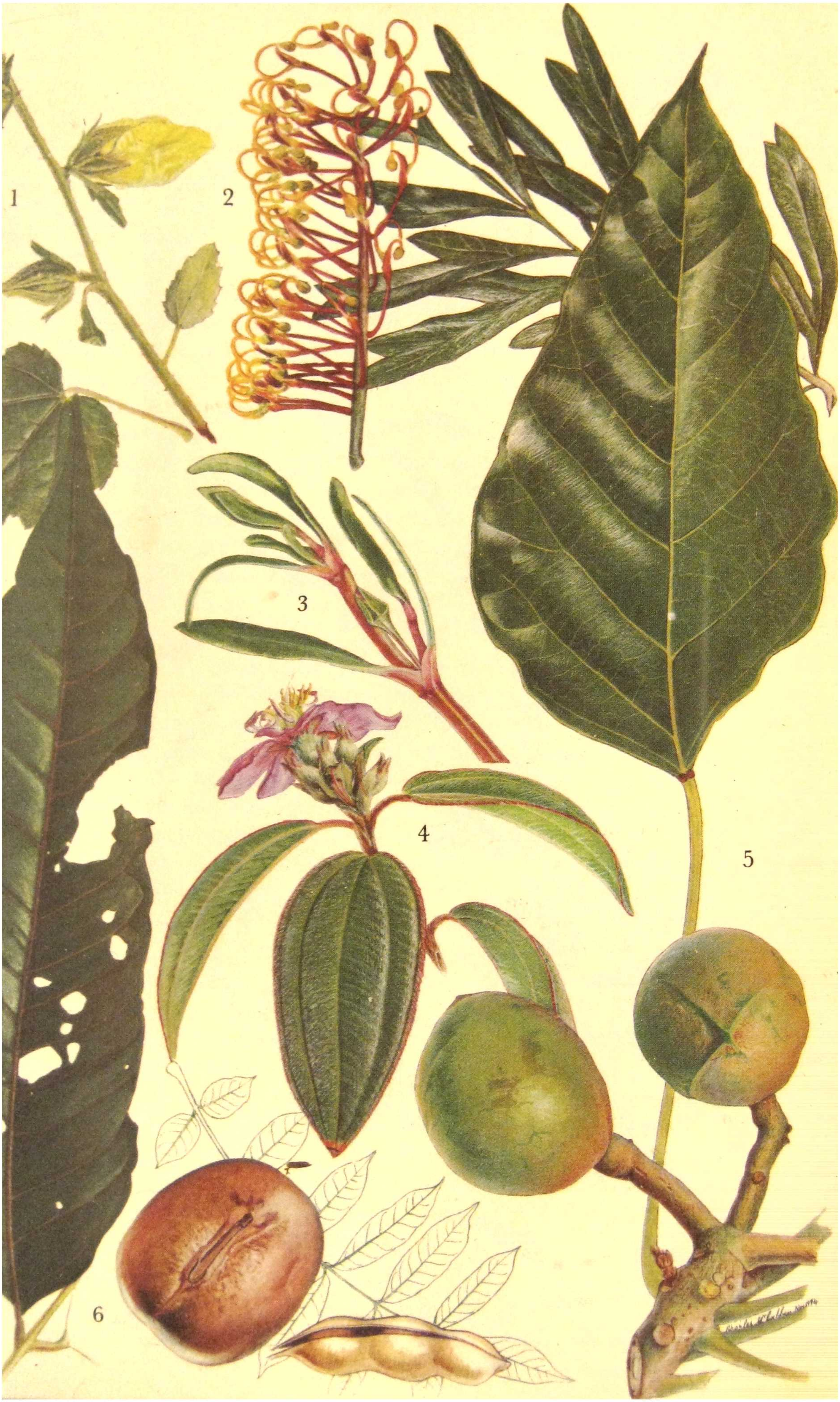
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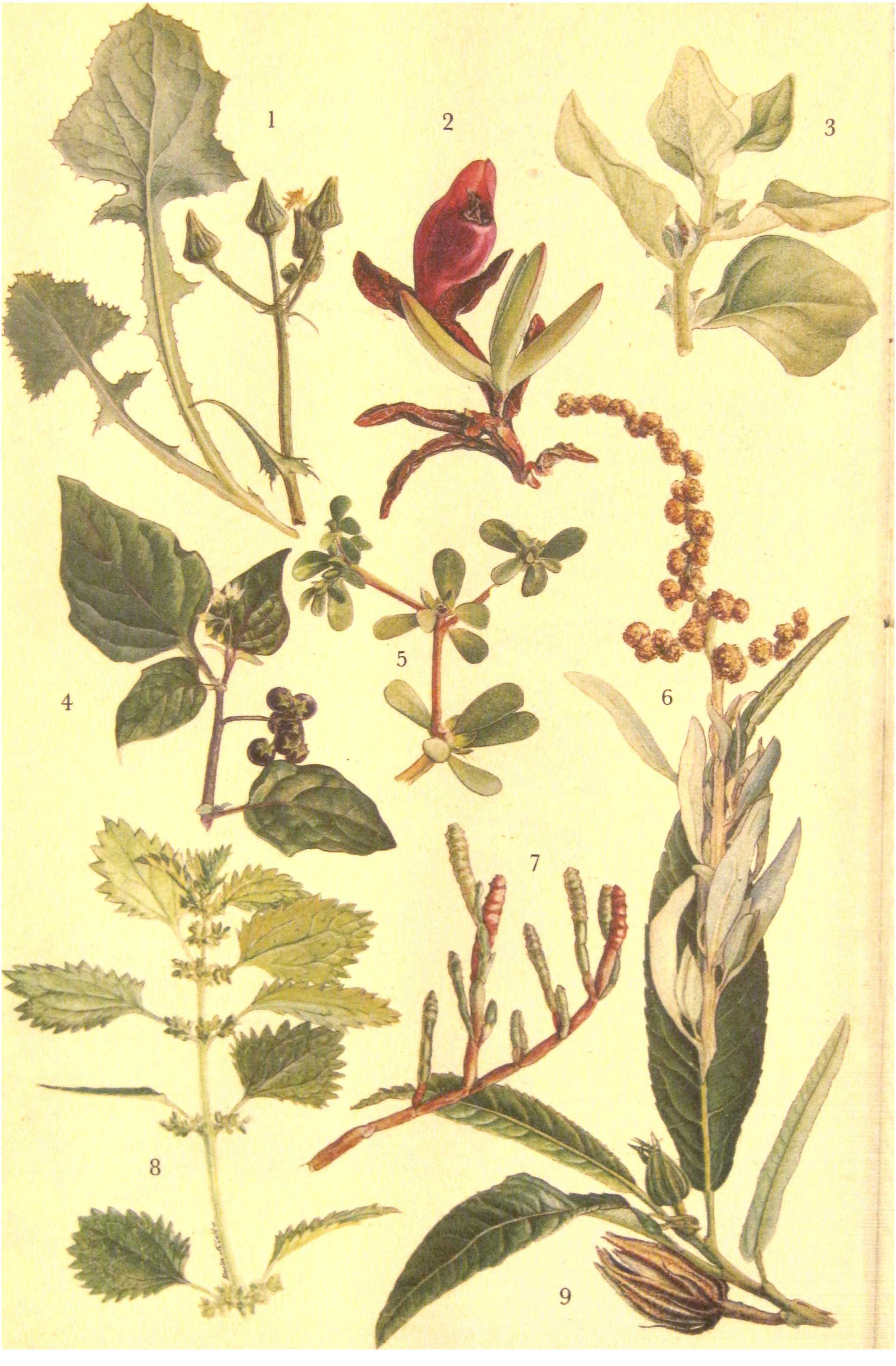
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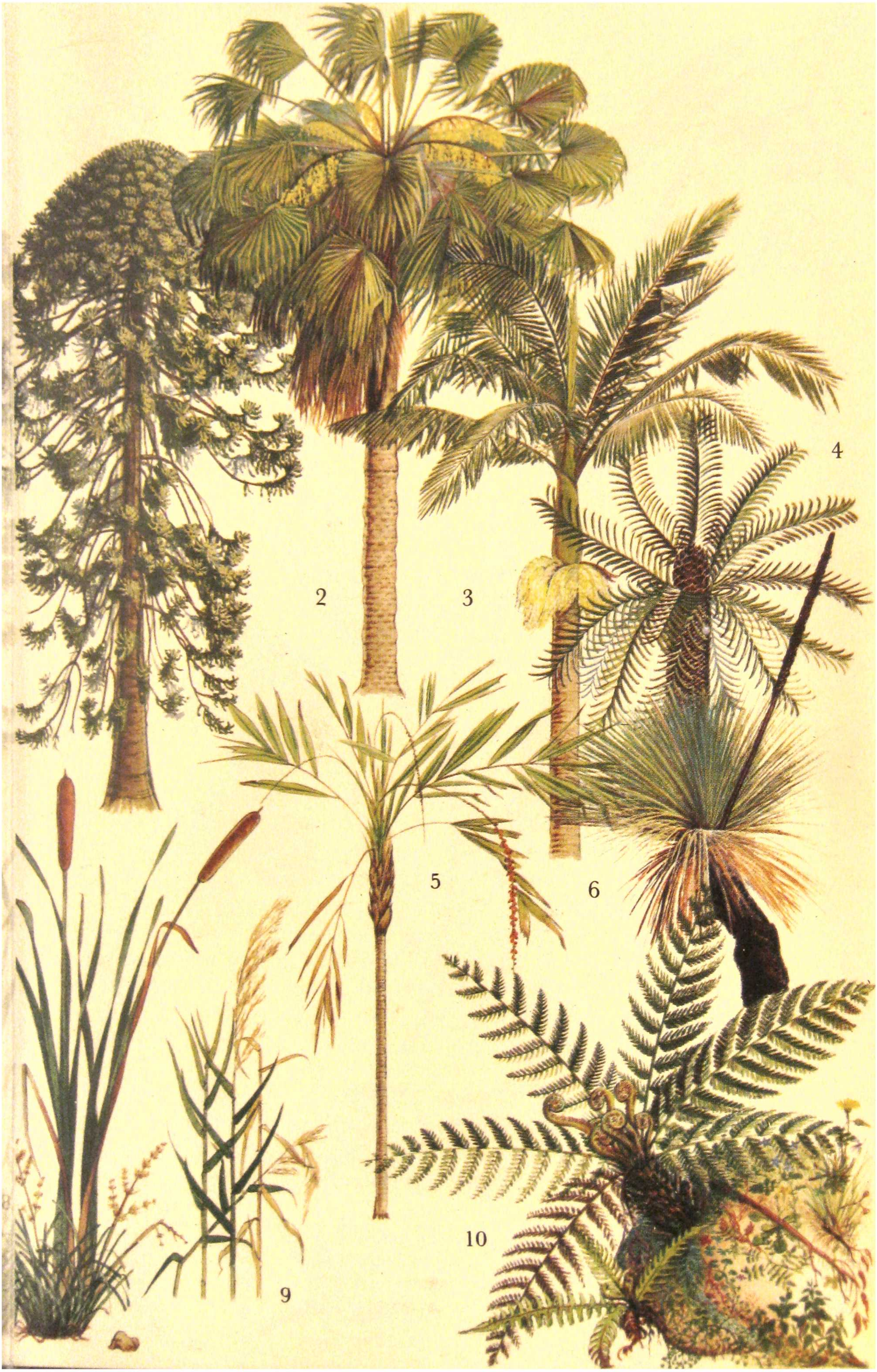
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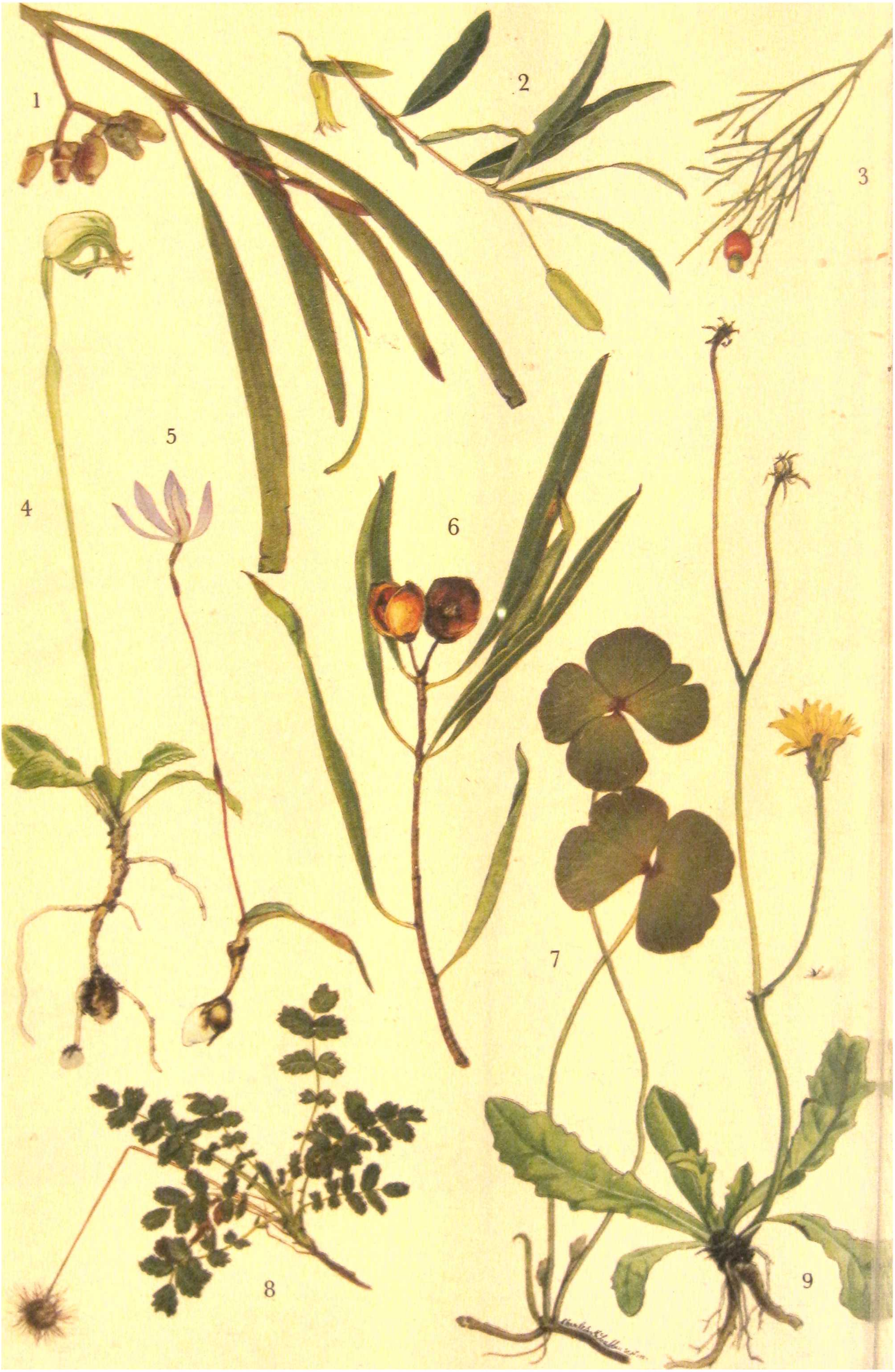
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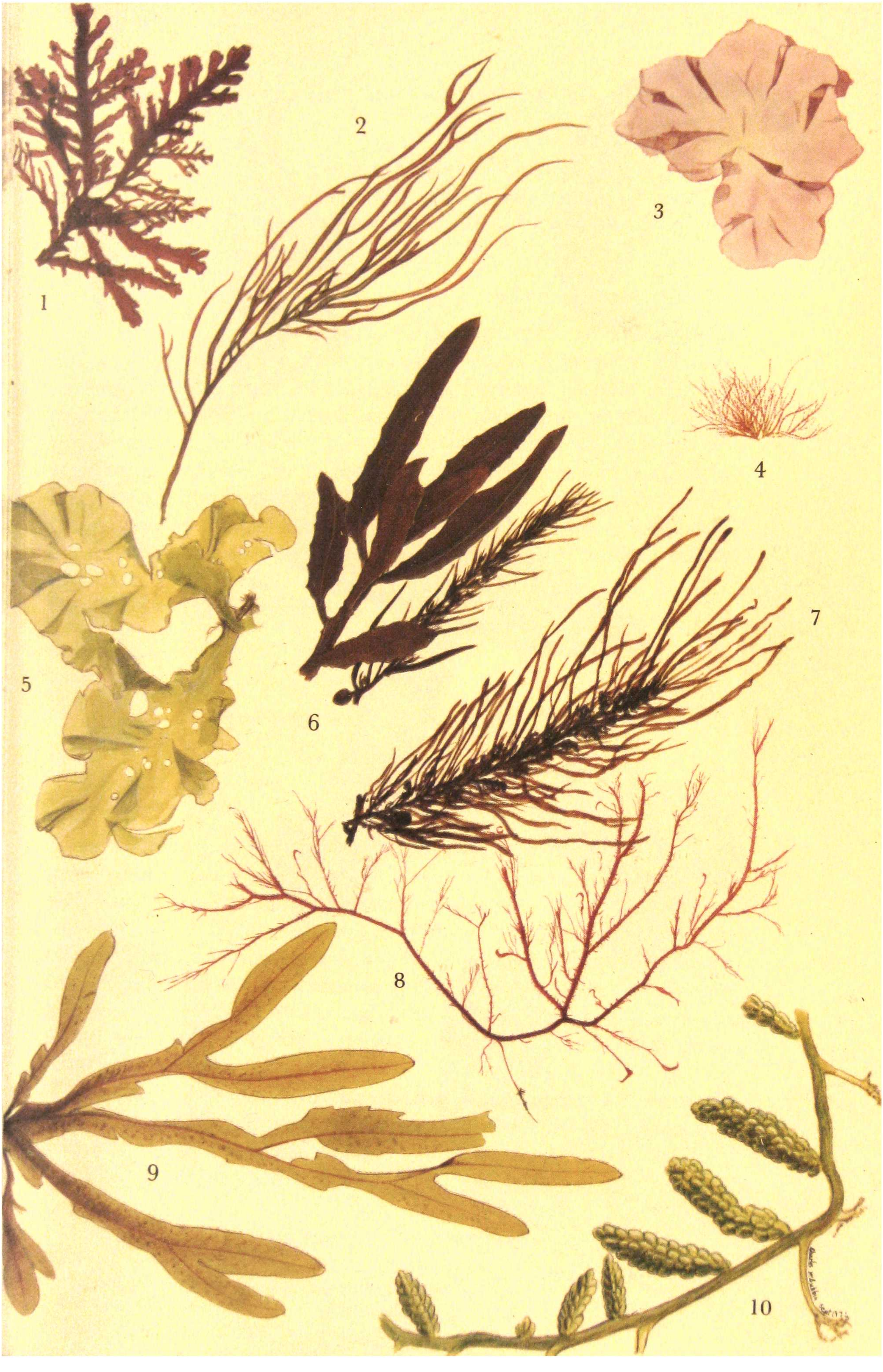
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